

THE  
VETERINARY BULLETIN

Vol. 29]

September, 1959

[No. 9

## DISEASES CAUSED BY BACTERIA AND FUNGI

EDWARDS, S. J. & SMITH, G. S. (1959). **Staphylococcal antitoxin in the blood and milk of cattle.**—*J. comp. Path.* 69, 208-215. [Authors' conclusions modified.] 2725

Staphylococcal antitoxin was present in the blood of 159 (79%) of 202 cattle and its titre increased with the age of the animal.

Antitoxin response in the blood was specifically related to the toxigenic character of the staphylococcus present in the udder of the cow or in the respiratory tract of the pig.

The blood titre did not increase at the time of calving except in cows developing clinical mastitis due to staphylococci.

Antitoxin was present in very low concentrations in the milk of cows in full lactation, but in the colostrum its titre was equal to that of the blood. It remained at this titre for a few days only in normal cows, but in those developing staphylococcal mastitis it persisted longer.

No definite correlation between increased antitoxin titre of the milk and the presence of staphylococcal infection was found, but there was a close relationship with a high blood titre.

LIDWELL, O. M. (1959). **Apparatus for phage-typing of *Staphylococcus aureus*.**—*Mon. Bull. Minist. Hlth Lab. Serv.* 18, 49-52. [Author's summary.] 2726

Apparatus is described for assisting mechanically the phage-typing of *Staph. aureus*.

LIEBERMAN, R., DOUGLAS, J. O. A. & HUMPHREY, W., JR. (1959). **Ascites induced in mice by staphylococcus.**—*Science* 129, 775. [Authors' abst. modified.] 2727

An adequate supply of potent antibody is indispensable for studies in basic immunology. This report describes a method for producing ascitic fluid containing high titres of antibody against *Staph. aureus* in mice. Two to three i/p injections of 0.3 ml. of a killed suspension of

*Staph. aureus* mixed with complete Freund's adjuvant, given at 5-day intervals, induced ascites in 100% of mice.

SETHI, M. S., HALE, H. H. & PLASTRIDGE, W. N. (1958). **The detection of *Streptococcus agalactiae* in unincubated and incubated milk samples.**—*Cornell Vet.* 48, 91-102. 2728

*Str. agalactiae* was isolated from 142 of 543 unincubated milk samples from 9 infected herds by culturing gravity cream on blood agar and from 133 by culturing whole milk on blood agar. After incubation at 37°C. for 16-18 hours, *Str. agalactiae* was isolated from 238 samples. In 77 of these, streptococci were not seen in incubated milk films and evidence was obtained which indicated that the isolation of *Str. agalactiae* from these did not represent infection especially when the leucocyte count was under one million per ml. Streptococci, of which 161 were *Str. agalactiae*, were seen in 187 incubated milk films. Identification of streptococcus colonies on Manniso-cv plates showed that 94% of 195 weakly beta-haemolytic colonies, 37% of 126 gamma colonies and 5% of 152 colonies with green or brown discoloration were *Str. agalactiae*. The CAMP test made on ferric citrate esculin blood agar was efficient in differentiating gamma colonies into *Str. agalactiae* and other streptococci.—A. ACKROYD.

GUALLINI, L. & VALLIS, P. (1957). **Ricerche sulla citologia del latte mastitico. Nota I. Il numero delle cellule statisticamente valutato. [Cell count in milk from cows with mastitis. I. Statistical analysis.]**—*Arch. Vet. Ital.* 8, 575-595. [Summaries in English, French, German and Spanish.] 2729

Statistical analysis of milk samples from 285 healthy and 216 infected quarters revealed that the cell count varied with age and period of lactation. In normal milk during the first 15



days of lactation the cell count varied from 22,000,000 to 10,000–20,000/ml. Thereafter it averaged: 23,410 (69–90 days); 46,980 (120–150 days); 51,650 (180–210 days); 59,010 (240–270 days). For the same periods in the 5th lactation it averaged: 68,370; 44,510; 65,013; 42,000; and 68,530. In milk from infected quarters it was 2,539,980 (6–90 days); 2,293,500 (120–210 days); 1,918,490 (240–270 days). Optimal threshold values obtained were: 156,840 (6–90 days); 184,630 (120–210 days); 216,080 (240–270 days). For diagnostic purposes, with a standard error of 2.5% the value of 2 sigma was: 213,720; 319,900; and 270,000 cells/ml. Very high counts were obtained from milk from infected quarters with clinical lesions: 6,736,100; 9,582,120; and 28,410,290.

—T.E.G.R.

PEARSON, J. K. L. & MCGOWAN, D. (1958).

**Pulmonary tuberculosis in a cow due to the avian type of tubercle bacillus.**—*Brit. vet. J.* **114**, 477-480. **2730**

The occurrence of acute clinical pulmonary TB. due to the avian type of tubercle bacillus is reported in a 9-year-old Friesian cow in an attested self-contained herd of 25 cattle. Lesions were confined to the left lung. Comparative and Stormont tuberculin tests on the herd showed that sensitivity to avian tuberculin was pronounced in the remaining cattle. Tests on deep-litter poultry on the farm were negative.

—A. ACKROYD.

HALL, C. H., JR. & ATKINS, E. (1959). **Studies on tuberculin fever. I. The mechanism of fever in tuberculin hypersensitivity.**—*J. exp. Med.* **109**, 339-359. [Authors' summary modified.] **2731**

Evidence has been presented that the fever elicited by i/v injection of Old Tuberculin (O.T.) in BCG-infected rabbits is a specific property of this hypersensitivity system and is probably due to contamination of tuberculin with bacterial endotoxins. Sensitized rabbits given daily injections of O.T. quickly became tolerant to its pyrogenic effect. Tuberculin tolerance can be differentiated from tolerance to endotoxins and was invariably associated with a negative skin test. The mechanism of this tolerance would thus appear to be desensitization.

A circulating pyrogen found during tuberculin fever was indistinguishable biologically from endogenous pyrogens obtained in other types of experimental fever. It produced fever in normal recipients and therefore differed from O.T. itself which was pyrogenic in sensitized

animals only. Since the titre of serum pyrogen was directly proportional to the degree of fever induced by injection of O.T. a causal relationship is suggested.

It is postulated that tuberculin fever is due to a circulating endogenous pyrogen released by a specific action of O.T. on sensitized cells of the host.

MARKS, J. (1959). **A simple method for the cultivation of tubercle bacilli.**—*Mon. Bull. Minist. Hlth Lab. Serv.* **18**, 81-86. [Author's summary modified.] **2732**

An alkaline homogenate of sputum is inoculated directly on to acid egg medium and into acid liquid medium without neutralization or centrifugation. With the conditions recommended, this method is considered to be 99% as effective as a full-scale method with film-positive specimens and 98% with film-negative specimens.

CUNNINGHAM, M. P. & GILMOUR, N. J. L. (1959). **A survey of the incidence of *Mycobacterium johnei* infection in calves under one week old.**—*Vet. Rec.* **71**, 295 & 296. [Authors' summary modified.] **2733**

Of 158 calves under one week of age, only one was infected with *M. johnei*. The significance of this finding with reference to the epidemiology of the disease is discussed.

RANKIN, J. D. (1959). **The estimation of doses of *Mycobacterium johnei* suitable for the production of Johne's disease in cattle.**—*J. Path. Bact.* **77**, 638-641. [Author's summary modified.] **2734**

The i/v dose of a strain of *M. johnei* which would produce lesions of Johne's disease in 50% of cattle, inoculated as month-old calves, was calculated to be 5 mg. of cultivated organisms weighed wet.

SIMPSON, C. F., WOOD, F. G. & YOUNG, F. (1958). **Cutaneous lesions on a porpoise with erysipelas.**—*J. Amer. vet. med. Ass.* **133**, 558-560. **2735**

During a period of six years some eight porpoises at the Marineland Studios in Florida had cutaneous lesions. One such porpoise (*Tursiops truncatus*), 18 months old, developed well-defined cutaneous plaques on its side. Although it had no other signs of disease it died six days later and was examined P.M. Apart from the skin lesions there were splenomegaly, yellowish liver, and a haemorrhagic gastritis. Bacteriological and histological findings are



described. *Erysipelothrix rhusiopathiae* was recovered in pure culture from spleen and subcutaneous fat.—R. N. FIENNES.

JARRETT, W. F. H., MCINTYRE, W. I. M. & THORPE, E. (1959). *Erysipelothrix monocytogenes* infection in piglets.—*Vet. Rec.* **71**, 225-226. [Authors' summary.] **2736**

An outbreak of *Erysipelothrix monocytogenes* infection in piglets in Scotland is described. The findings are compared with the disease described in America.

TODOROV, T. G. (1958). [The causal agent of infectious mastitis in sheep and its relation to the genus *Pasteurella*.]—*Izv. Inst. Pat. Zhivotni, Sofia* **7**, 203-232. [In Bulgarian. Summaries in English and Russian.] **2737**

The morphological, cultural, biochemical, antigenic, pathogenic and immunogenic properties of 32 strains of bacteria isolated from infectious mastitis of sheep were those of *Past. mastitidis*, as were also two strains from pneumonia in lambs. Clinically similar mastitis was produced in ewes by intramammary inoculation of *Past. mastitidis*, *haemolytica*, or *septica*. The author believed that the two species *mastitidis* and *haemolytica* were identical.—R.M.

HAMDY, A. H., GALE, C. & KING, N. B. (1958). Studies on shipping fever of cattle. II. Isolation of pleuropneumonia-like organisms.—*Amer. J. vet. Res.* **19**, 818-821. **2738**

Three strains of pleuropneumonia-like organisms (PPLO) isolated from the respiratory tracts of 7 calves with shipping fever, when inoculated into 3 calves intratracheally and intranasally either alone or with *Pasteurella septica* with or without stress, failed to reproduce the shipping fever syndrome. They did not produce symptoms in hamsters, rabbits, g.pigs, or adult mice, but in turkey poults, although no apparent sinusitis developed, antibodies against PPLO appeared in the blood 4 weeks after intrasinus inoculation.—A. ACKROYD.

SMITH, J. E. (1959). Studies on *Pasteurella septica*. III. Strains from human beings.—*J. comp. Path.* **69**, 231-235. [Author's conclusions modified.] **2739**

*Past. septica* was isolated from the throat of two of 71 veterinary students. Certain properties of the strains suggested that they may have come from cattle or pigs.

*Past. septica* cultures from dog bites (7) showed properties characteristic of strains from healthy dogs, and those from cat bites (3) resembled strains from healthy cats.

The characteristics of six strains from internal disease in human patients suggested that the infection may have been acquired from cattle, pigs or, in two cases, cats, but not from dogs.

DAVIS, B. R. & EWING, W. H. (1958). Six new *Escherichia coli* H antigens, H41 to H46.—*Canad. J. Microbiol.* **4**, 517-519. **2740**

Six new *E. coli* H antigens numbered 41 to 46, having no significant relation to other described antigens from strains of *E. coli*, are presented for tabulation. The results of studies indicated that antisera prepared with these antigens may be used successfully in diagnostic work in dilutions of 1:1,000 without adsorption. During these studies a new O antigen was recognized and recorded as O-140.

—R. V. L. WALKER.

SZABÓ, I. (1958). A sertések oedema—(gyomorbel-oedema) betegségről. [Gut oedema in pigs in Hungary.]—*Mag. állator. Lapja* **13**, 295-297. [In Hungarian. Summaries in English and Russian.] **2741**

Of 1,653 pig carcasses examined in the Institution of Animal Health in Budapest, intestinal oedema was found in 102, from 98 of which haemolytic strains of *Escherichia coli* were isolated. In the carcasses of 73 pigs which had died from causes other than gut oedema, haemolytic strains of *E. coli* were found only exceptionally. S. attributes unique pathogenicity to the adsorbed toxins of this organism in the aetiology of intestinal oedema and suggests the bacteriological examination of faeces as the most efficient means of diagnosis.—A. SEBESTENY.

KALLINGS, L. O., LAURELL, A-B. & ZETTERBERG, B. (1959). An outbreak due to *Salmonella typhi murium* in veal with special reference to phage and fermentation typing.—*Acta path. microbiol. scand.* **45**, 347-356. [In English. Authors' summary modified.] **2742**

An outbreak of food poisoning due to *S. typhi-murium* and comprising about 500 cases was traced to imported boneless veal by phage and fermentation typing. Cultures of *S. typhi-murium* isolated from boneless veal imported into Gt. Britain and from outbreaks occurring in the exporting country were found to belong to the same phage and fermentation types as the cultures isolated from the veal imported into Sweden.

The occurrence of a change in phage type specificity in certain cultures is reported.



GITTER, M. (1959). Isolation of *Salmonella cholerae suis* from post-mortem specimens.—*Vet. Rec.* **71**, 234-236 & 237. [Author's summary modified.] **2743**

30 strains of *S. cholerae-suis* were mixed with pig's intestinal contents and after 24 hours' incubation at 37°C. only 11 were recovered on MacConkey agar as compared with 29 on brilliant green-neutral red-lactose agar. Direct plating on brilliant green-neutral red-lactose agar was found superior to the use of selenite-F enrichment medium.

The use of brilliant green-neutral red-lactose agar and routine cultural examination of pigs' gall-bladders resulted in marked increase in isolates of *S. cholerae-suis*.

GROSZ, H. J. & NORTON, J. (1959). Effect of chlorpromazine on *Salmonella enteritidis* infection in mice.—*Science* **129**, 784-785. [Authors' abst. modified.] **2744**

Chlorpromazine increased the susceptibility of mice to *S. enteritidis*.

GORDON, R. F., GARSIDE, J. S. & TUCKER, J. F. (1959). The use of living attenuated vaccines in the control of fowl typhoid.—*Vet. Rec.* **71**, 300-304 & 305. [Authors' summary modified.] **2745**

Evidence is submitted confirming the efficiency of attenuated live vaccines of *Salmonella gallinarum*, 9S and 9R, against fowl typhoid.

There was no difference in susceptibility to, nor in response to, either vaccine amongst the four breeds tested. Vaccination at 8 weeks of age produced an appreciably better immunity than at 4 weeks of age.

The use of vaccine 9R appears justified as it confers an appreciable degree of immunity without seriously interfering with the routine blood test for carriers of *S. pullorum*; in addition it is of low virulence for chicks and its transmission through the egg from vaccinated laying birds appears to be almost negligible.

FERRARI, A. (1958). Risultati conseguiti in fase di prima attuazione del "piano di profilassi della brucellosi animale" nella Valle Anzasca (Prov. di Novara). [Results of the plan for the control of brucellosis in domestic animals in the Novara Province, Italy.]-*Vet. ital.* **9**, 828-836. **2746**

In the Anzasca valley (high up in the Alps close to the French/Italian border) where brucellosis both human and animal is endemic and at times almost epidemic, infection is especially common in the mountain pasture season (April-May) when flocks and herds from a number of

areas meet, and after parturition and during lactation of the goats.

In the autumn of 1956 an eradication campaign was started based on compulsory diagnosis (by agglutination) and slaughter of test-positive animals with compensation. Where slaughter was not immediately possible the animals were isolated under strict supervision.

The ring test was not used for preliminary diagnosis because so many herds were very small. The number of sheep slaughtered was higher than had been expected.

Cattle are considered to play an important part as a reservoir of undulant fever due to *Br. melitensis* in man, and following up human cases diagnosed in 2 years 96 out of 600 cows were found infected. In some cases *Br. melitensis* was found in the aborted fetuses and the cattle were probably infected by contact with sheep or goats. Most of the positive goats were killed within 10 days but in view of the very large numbers found infected total slaughter was not economic—hence the isolation. The following figures are given from about 9 communes (animals tested; positive; slaughtered):- Cattle 1,106; 10; 7. Goats 2,565; 204; 176. Sheep 1,994; 187; 186.

F. concludes that in the Anzasca valley the slaughter policy is a great step forward though the disease is not yet eliminated.

—W. K. DUNSCOMBE.

JACOTOT, H. & VALLÉE, A. (1959). Étude expérimentale d'une brucelle streptomycino-dépendante dérivée de la souche B19 (souche Olitzki). [Experimental study of a streptomycin-dependent brucella strain derived from Strain 19.]-*Ann. Inst. Pasteur* **96**, 481-484. [English summary modified.] **2747**

The streptomycin-dependent brucella strain isolated by Olitzki [*V.B.* **23**, 3011] and always growing in S form, has been compared with the usual vaccine strain and particularly with the Strain 19 from which it is derived. It proved less pathogenic than the Strain 19 and possessed very satisfactory immunizing properties.

PROHÁSZKA, L. (1959). Kísérletek csökkent virulenciájú *Brucella suis*-törzsek előállítására. [Production of strains of *Brucella suis* of low virulence by ultra-violet irradiation.]-*Mag. állator. Lapja* **14**, 15-16. [In Hungarian. Summaries in English and Russian.] **2748**

An attenuated strain of *Br. suis*, named "Strain E", was obtained by ultra-violet irradiation of the colonies of virulent *Br. suis* in 7 consecutive passages. The "E" strain had an



increased amino-acid requirement and a markedly lower virulence than the parent strain. Agglutinins in the serum of g.pigs inoculated s/c with  $5 \times 10^9$  organisms of the "E" strain could be detected after 3 weeks in 1:20–1:40 dilutions only, but in the serum of those inoculated with the parent strain in 1:640–1:1,200 dilutions. From the spleen of mice which were previously immunized with the "E" strain, virulent *Br. suis* could not be isolated after artificial i/p infection.

In the serum of 3 brucellosis-free sows which were s/c infected with 40 thousand million organisms of the "E" strain, agglutinins in a low titre were found, while complement-fixing antigens were not demonstrable. Two of them, which were pregnant, produced viable and healthy litters 25 and 58 days after the infection. The serum of 1 pregnant and 1 non-pregnant control sows infected with the same doses of the virulent strain contained agglutinins and c.f. antigens in high titres and the pregnant one produced a non-viable, brucella-infected litter, 35 days after infection.

Further field trials on the immunizing power of this strain are projected.

—A. SEBESTENY.

WIDDICOMBE, J. G., HUGHES, R. & MAY, A. J. (1959). **Physical changes in the lungs during respiratory infection with *Brucella suis*.**—*Brit. J. exp. Path.* 40, 125–132. [Authors' summary modified.] 2749

Rabbits were infected with *Br. suis*, inhaled into the lungs as single organisms, and lung physiology was studied to correlate it with pathological findings.

Despite some thickening and cellular infiltration of the alveoli there was no evidence of increased rigidity of the lungs in the eupnoeic range of inflation volumes, and a decrease in rigidity was found above this range.

Pulmonary capillary permeability was considerably increased as measured by the rate of formation of oedema fluid.

BOKORI, J., KEMENES, F. & SZEMERÉDI, G. (1958). A juhok pomona-leptospirosisá hazánkban. [*Leptospira pomona* infection in sheep in Hungary.]—*Mag. állator. Lapja* 13, 352–354. [In Hungarian. Summaries in English and Russian.] 2750

Antibodies against *L. pomona* in titres from 1:200–1:1,600 were demonstrated by agglutination test in the serum of 14 of 135 lambs, 6–14 months old, kept in contact with *L. pomona* infected pigs. However, no symptoms could be observed, and from their kidney no organism

could be isolated. The disease could not be reproduced experimentally in lambs with s/c and i/p injections of *L. pomona* cultures originating from the pigs. It was reproduced in lambs by using cultures originating from infected calves or their toxins.

In a flock of 180 lambs, in close association with cattle, 14 lambs died or were emergency slaughtered exhibiting anaemia, icterus, haemoglobinuria and haemorrhages within five days, as a consequence of an outbreak of leptospirosis affecting 25% of the flock. One month later serological tests were carried out on 10 lambs. The serum of 5 of them contained antibodies against *L. pomona* in titres from 1:800–1:12,800 and the organism was isolated from the kidney of one of the two slaughtered reactors. The authors suggest that in cases of haemolytic diseases in lambs *L. pomona* should be suspected as the causal agent.—A. SEBESTENY.

GILLESPIE, R. W. H. & KENZY, S. G. (1958). **Immunization of cattle against leptospirosis. I. Comparative evaluation of *Leptospira pomona* bacterins.**—*Vet. Med.* 53, 401–408 & 449. 2751

Heifers vaccinated when 6–8 months old with 5 ml. of any of 3 *L. pomona* killed vaccines became seropositive with agglutinin titres ranging between  $10^{-1}$  and  $10^{-2}$ ; 7–8 months later, 11 out of 12 resisted a challenge with infective urine for 6–10 days either by instillation into the eyes and nostrils or in drinking water. Calves similarly vaccinated when 1–2 months old did not produce agglutinins and 13 of 17 became infected when similarly challenged. The disease, however, appeared to be milder than in controls.—A. ACKROYD.

FAINE, S. (1959). **Iron as a growth requirement for pathogenic leptospira.**—*J. gen. Microbiol.* 20, 246–251. [Author's summary modified.] 2752

Virulent and avirulent strains of *L. icterohaemorrhagiae* did not grow from inocula of fewer than  $10^7$  organisms/ml. in Korthof medium, but did grow when  $\text{FeCl}_3$  or preparations containing iron porphyrins were added. With added  $\text{FeCl}_3$  or haematin, growth was somewhat slower than with preparations containing iron porphyrins.

WILLIS, A. T. & HOBBS, G. (1959). **Some new media for the isolation and identification of clostridia.**—*J. Path. Bact.* 77, 511–521. [Authors' summary.] 2753

Comparison of a number of media for the detection of saccharolytic and proteolytic pro-



perties of clostridia shows that glucose-gelatin and lactose-egg yolk-milk agar are the most useful for preliminary examination of pure cultures of clostridia, since these media together provide a great deal of information rapidly and in an easily detectable form.

The value of neomycin as a selective agent for the isolation of *Cl. welchii* type A has been confirmed. Its use, as neomycin sulphate, in lactose-egg yolk-milk agar has been extended to the isolation of all types of *Cl. welchii* and most of the commonly occurring clostridia.

MOUSSA, R. S. (1959). **Antigenic formulae for *Clostridium septicum* and *Clostridium chauvoei*.**—*J. Path. Bact.* **77**, 341-350. 2754

It was suggested that the serological and other differences between *Cl. septicum* and *Cl. chauvoei* do not justify regarding them as two distinct species, and that they might very well be regarded as Types A and B of the single species *Clostridium septicum*.—R.M.

AYALON, N. & NEEMAN, L. (1958). [**Vibriosis in dairy cattle in Israel.**]—*Refuah vet.* **15**, 112-116. In Hebrew. [In English p. 148.] 2755

In Israel, *Vibrio fetus* was first recovered from aborted foetuses in 1933, but it was not until 1947 that it was realized that it was responsible for the lowered fertility in the numerous herds of dairy cattle served almost entirely by artificial insemination (AI). Mucus agglutination tests showed a 15% incidence of reactors in infected herds although the relative incidence over the period 1945-56 of *V. fetus* in positive foetuses was 49%. By replacing for use in AI the infected bulls by young bulls which had never served naturally, the incidence in 1956 of reactors had been reduced to 2%, no *V. fetus* had been recovered from positive foetuses and the conception rate had risen from 40% to 50%.

—A. ACKROYD.

MELROSE, D. R., MORGAN, W. J. BRINLEY & STEWART, D. L. (1959). **The treatment and subsequent reinfection of heifers infected with *Vibrio fetus*.**—*Vet. Rec.* **71**, 411-414. [Authors' summary modified.] 2756

Sixteen of 17 heifers infected with *V. fetus* were cured by intra-uterine injections of penicillin and streptomycin on 3 consecutive days; the remaining animal was cured on re-treatment. The outcome of the treatment was assessed bacteriologically.

After treatment, 13 of the heifers were re-inseminated with semen or sheath washings from infected bulls. Nine became re-infected and, of

these, 6 had been re-inseminated from the same bull used for the original infection. One heifer became infected after the second attempt at its re-infection but the remaining animals did not become re-infected.

The efficacy of treatment and its possible effect on immunity are discussed.

MORGAN, W. J. BRINLEY. (1959). **Studies on the antigenic structure of *Vibrio fetus*.**—*J. comp. Path.* **69**, 125-140. [Author's conclusions modified.] 2757

By immunizing rabbits with suspensions of *V. fetus* that had been boiled under a reflux condenser for 2 hours and using such sera for agglutination and agglutinin-absorption tests, two O groups were detected. Both ovine and bovine strains were found in each group.

By adsorbing OH sera with homologous O suspensions, sera containing only H antibodies were obtained and these were used for agglutination and agglutinin-absorption tests. Nearly all strains contained a common H component; and additional type-specific H components common to a few strains as well as strain-specific H components occurred.

Neither the O nor the H sera agglutinated non-pathogenic, catalase-negative vibrios.

DIPLOCK, P. T. (1958). **Necrobacillosis of the tongue in sheep.**—*Vet. Insp. N.S.W.* pp. 51 & 53. [Author's summary.] 2758

An outbreak of necrobacillosis of the tongue in sheep is reported, in which the primary injury appeared to be due to the burrs of *Xanthium chinense*.

VÖRÖS, J. (1958). **Fungistatic activity of the species *Sphaeropsidales* and *Melanconiales*.**—*Acta microbiol. Acad. Sci. hung.* **5**, 261-266. [In English.] 2759

Using selective media, pure cultures of 39 species of the order *Sphaeropsidales* and 10 of the order *Melanconiales* were prepared and their fungistatic activity tested *in vitro* against six test fungi, including *Aspergillus niger*. Five of the species tested were active. The highest fungistatic activity against *A. niger* was shown by *Phoma longissima* in a semi-synthetic liquid medium.—E. G. WHITE.

✓EVANS, J. H. & BAKER, R. D. (1959). **Treatment of experimental aspergillosis with amphotericin B.**—*Antibiot. & Chemother.* **9**, 209-213. [Summary in Spanish p. 253. Authors' summary modified.] 2760

Lesions were virtually absent in rabbits inoculated with *Aspergillus* spores and treated



immediately with amphotericin B. Controls died within 5 days with hyphal lesions scattered throughout the organs. When treatment was delayed for two days, the drug protected one animal but another died at the same time as the controls.

LINDH, H. F. (1959). **A method of evaluation of antifungal drugs against enteric *Candida albicans* in mice.**—*Antibiot. & Chemother.* **9**, 226-131. [Summary in Spanish p. 254. Author's summary modified.] **2761**

Mice were given a suspension of *C. albicans* in liquid Sabouraud's medium in lieu of drinking water for 18 hours. The drugs were given in the diet for 24 hours before and 6 hours after infection. At the conclusion of the treatment a faecal pellet was collected from each mouse, placed in an antibiotic solution, triturated, and 0.05 ml. plated on Sabouraud's glucose agar. A reduction of the average *C. albicans* colony count by 90% or more as compared with that of controls was considered to indicate activity. This method was used to compare the antifungal activity of nystatin, pimarin, and trichomycin. Nystatin was active at (but not below) 0.0125% in the diet; trichomycin was active at 0.25% in the diet (i.e., an activity equivalent to that of nystatin on the basis of *in vitro* unitage). Pimarin was inactive and non-toxic at 0.05%, the highest level tested. The activity of nystatin was confirmed *in vivo*.

MADDY, K. T. (1959). **Coccidioidomycosis in animals.**—*Vet. Med.* **54**, 233-242. [Author's summary modified.] **2762**

M. discussed the literature and reported new cases in cattle, sheep, dogs, a llama, a donkey, horses, pigs, and a tapir. This infection is probably common in many species of mammals in the south-western States of the U.S.A.

Clinically important infection has been recognized only in the dog. Infected animals and persons are not considered directly infectious to each other.

BAXTER, J. T. & GRACEY, J. F. (1958). **Mycotic dermatitis of sheep.**—*Vet. Rec.* **70**, 1001. **2763**

A severe mycotic dermatitis is described in a young Suffolk ram, in Northern Ireland. Two very mild cases were found among the ewes in the flock but none in a second flock in which the ram had been for about a year.

Wool specimens from the ram yielded *Dermatophilus dermatonomus*, the organism being seen microscopically and cultured on 5% ox blood agar at 37° C.—E. G. WHITE.

MARTIN, A. R. (1958). **The systemic treatment for dermatophytoses.**—*Vet. Rec.* **70**, 1232. **2764**

M. states that griseofulvin was shown in April 1956 to have a beneficial effect on lesions in g.pigs produced by *Trichophyton mentagrophytes*, when given orally or i/p. It is stated that this was the first successful use of a drug given systemically in the treatment of dermatophyte infection.—E. G. WHITE.

GENTLES, J. C., BARNES, M. J. & FANTES, K. H. (1959). **Presence of griseofulvin in hair of guinea pigs after oral administration.**—*Nature, Lond.* **183**, 256-257. **2765**

Griseofulvin was detected by bio-assay in bulked hair from g.pigs given repeated oral doses of the drug. About half of the griseofulvin was extractable by cold water and may have been excreted through the skin. The rest was deposited in the keratin: this suggests that the eradication of dermatophytic infections by the drug is due to its incorporation in the keratinous tissues.—E. G. WHITE.

McPHERSON, E. A. (1959). ***Trichophyton verrucosum* ringworm: a search for control agents.**—*Vet. Rec.* **71**, 425-430. [Author's summary modified.] **2766**

Using paper disks, a large number of chemicals were screened for antimycotic activity against *T. verrucosum*. Captan, monosulfiram, sodium hypochlorite, 5 quaternary ammonium compounds, and 7 surface active anionic detergents were fungistatic in very low concentrations. Lysol, captan, monosulfiram and sodium hypochlorite and commercial creosote were efficient in 10 min., while at this exposure time, only 3 surface active agents proved fungicidal.

AVRAM, A., ALTERAS, I., CARJEWSCI, M. & ILESCU, M. (1958). **Microsporie observée chez un groupe de lions en captivité. (Foyer épizootique déterminé par *Microsporium lanosum*).** [*Microsporium* infection in captive lions.]—*Mycopathologia.* **9**, 288-298. [In French. Summary in English.] **2767**

An account of a ringworm infection of circus lions at Zürich, caused by *Microsporium lanosum*. Six cubs and 15 of 19 adults were affected, the cubs most severely. The size and distribution of lesions was variable, but they were most commonly found at the back of the head, then on the body, and then on the limbs. Infection was transmitted experimentally to cats, dogs, g.pigs and man.—R. N. FIENNES.



- BAKAÏ, S. M. (1958). [Differentiation of toxic and non-toxic variants of *Stachybotrys alternans*.]—*Nauch. Trud. Ukrain. Inst. exp. Vet.* **24**, 199-211. [In Russian.] 2768

B. described differences in the morphology of colonies and in the formation of anastomoses between hyphae which served to distinguish toxic from non-toxic variants of the fungus.

—R.M.

- JERSTAD, A. C., HAMILTON, C. M. & SMITH, V. E. (1959). Egg transmission of infectious sinusitis in naturally infected turkeys.—*Avian Diseases* **3**, 28-40. [Authors' summary modified.] 2769

Poults from four flocks with no history of infectious sinusitis were hatched and reared in isolation and remained clinically free from the disease. Poults from five infected flocks and poults housed with them had an outbreak of the disease.

The healthy stock has shown no clinical evidence of the disease for five generations. The infected stock yielded progeny that showed no clinical evidence of the disease in the last two generations.

- SHELTON, D. C. & OLSON, N. O. (1958). Control of infectious synovitis. XI. The potentiating effect of terephthalic acid on chlortetracycline.—*Avian Diseases* **2**, 450-455. 2770

Terephthalic acid (at concentrations in the food of between 0.25 and 1.0%) potentiated the effect of chlortetracycline hydrochloride in controlling infectious synovitis in chicks. The mode of action of the potentiated mixture has not been determined but other evidence suggests that the blood concentration of the chlortetracycline is increased.—S. BRIAN KENDALL.

- DAVEY, L. A. & BRIGGS, C. A. E. (1959). The normal flora of the bovine rumen. Bacteriological evaluation of rumen contents by the examination of cud.—*J. agric. Sci.* **52**, 187-188. [Authors' summary.] 2771

Quantitative and qualitative bacteriological comparisons were made between complementary samples of cud and rumen contents using five fistulated cows receiving various diets; no marked differences were observed between samples taken from the same animal at the same time. This, with the method of collecting cud

described, simplifies bacteriological evaluation of the rumen contents of intact animals.

- GIBBONS, W. J., ATTLEBERGER, M. H., KIESEL, G. K. & DACRES, W. G. (1959). The bacteriology of the cervical mucus of cattle.—*Cornell Vet.* **49**, 255-265. [Authors' summary modified.] 2772

In a dairy herd of 125-130 adult cattle, 207 cultures of cervical mucus were made from normal-breeding cows during the postparturient period and from 20 classified as infertile. The presence of bacteria in the genital organs had no effect on subsequent breeding.

Some of the cows harbouring pathogenic organisms were treated with a uterine infusion of 400 mg. of tetracycline in solution. Treatment during the luteal phase of the oestrous cycle before breeding failed to improve the conception rate (c.r.); indeed the 23 controls harbouring pathogens had a better c.r. (1.78) than the 32 treated cattle (1.96). There was no evidence that non-specific endometritis was a major cause of sterility in this herd.

- RUDNICK, P. & HOLLINGSWORTH, J. W. (1959). Lifespan of rat erythrocytes parasitized by *Bartonella muris*.—*J. infect. Dis.* **104**, 24-27. [Authors' summary modified.] 2773

Rat erythrocytes heavily parasitized with *B. muris* were damaged irreversibly. This was shown by their decreased life span after transfer to normal rats or rats treated with oxytetracycline.

- SEAMER, J. & DOUGLAS, S. W. (1959). A new blood parasite of British cats.—*Vet. Rec.* **71**, 405-408. [Authors' summary modified.] 2774

A blood parasite, provisionally designated *Eperythrozoon felis*, was detected in blood smears taken from 6 cats presented at a Cambridge small-animal clinic. Morphologically the organism resembled *Haemobartonella felis*, which is considered to be responsible for feline infectious anaemia in the U.S.A. *E. felis* occurred on the surface of the erythrocytes, up to 50% of which were parasitized in experimental infections. Although anaemia occurred in experimentally infected cats, no other disease directly attributable to the infection was observed.



## DISEASES CAUSED BY PROTOZOAN PARASITES

EAST AFRICA HIGH COMMISSION. (1958). **East African Trypanosomiasis Research Organization Report July, 1956–December, 1957.** pp. 81. Nairobi: Govt. Printer. sh. 7/50. 2775

In the previous year there were many changes in the administrative staff and Directorate of the E.A.T.R.O. Basic studies in animal trypanosomiasis relate to the establishment of "normal" levels for the blood characteristics of East African cattle and to attempts to evolve complement fixation and trypanosome immobilization tests for diagnosis.

Drugs investigated have been ethidium suramate preparations R.D. 2902, ethidium bromide, prothidium and quinapyramine (prophylactic). Associated with these trials have been studies of the toxic reactions to the drugs and attempts to improve the methods of estimating the degree to which cattle are exposed to infection in the field—the "trypanosome challenge".

The mean values and standard deviations of the more important constituents of the blood of zebu cows were established from a sample of 40 normal animals kept in a state of husbandry differing little from that practised by most African owners in Eastern Uganda. These figures would therefore probably be widely applicable.

Trypanosomiasis is often difficult to diagnose. Of a number of precipitation reactions investigated to find a simple serological test for cryptic infections, the most promising was the gum mastic reaction.

From studies on the earliest stages of infection in the mammalian host, using trypanosomes of the *T. brucei* group, it was suggested that: when the fly feeds it normally ruptures some vessels and also probes extensively in the surrounding tissues: some trypanosomes escape into the general circulation where they survive and multiply, but many others are deposited in the tissue spaces, whence they migrate or are carried to the lymphatics to reach the general circulation later. In some hosts, notably man and rabbit, in addition to any multiplication of the trypanosomes that have migrated or been carried from the point at which they were introduced, some trypanosomes persist and multiply at the site of inoculation (producing a marked local reaction).

Other studies included the experimental infection of wild animals with trypanosomes.

—D. S. RABAGLIATI.

RISTIC, M. & TRAGER, W. (1958). **Cultivation at 37°C of a trypanosome (*Trypanosoma theileri*) from cows with depressed milk production.**—*J. Prot.* 5, 146-148. [Authors' summary.] 2776

Cultures of *Trypanosoma theileri* were obtained at 36° and 37.5°C. in a blood-lysate medium inoculated with blood from three dairy cows showing subnormal milk production. The organisms were first seen after 4 days in the first subculture, reached a maximum of about 500,000 per ml. on the 4th day of subsequent transfers. Crithidial forms predominated but trypanosomes of the blood-stream type were also numerous. Cultures were not obtained from cows with normal milk production. The infected cows, although free from helminth parasites, showed a marked eosinophilia.

CANTRELL, W. (1959). **Cortisone and the course of *Trypanosoma equiperdum* infection in the rat.**—*J. infect. Dis.* 104, 71-77. [Author's conclusions modified.] 2777

The following attributes of *T. equiperdum* infection in the rat were unaffected by large doses of cortisone (100 mg. per kg. daily): (1) the rate of increase during the log. phase of growth; (2) the deceleration of the parasitaemia curves at high levels of parasitaemia; and (3) the migration of trypanosomes from the peritoneal cavity to the blood after i/p inoculation. The results support the view that this infection is characterized by very low resistance.

The only effect of cortisone was survival of the rats for a few extra hours. This is attributed in part to an artefact and in part to the gluconeogenic action of cortisone.

FULTON, J. D. & MATHEW, K. K. (1959). **Tracer studies of the distribution and trypanocidal action of stilbamidine in rats.**—*Brit. J. Pharmacol.* 14, 137-141. [Authors' summary modified.] 2778

Stilbamidine labelled with radiocarbon was used to study the distribution of the drug in the organs and tissues of rats after i/v injection. The prophylactic action was shown to depend on the unchanged drug being retained in the tissues, especially the liver. Only the parent drug was extracted from trypanosomes when an infection was treated during the acute phase, as shown by the use of the fluorescent properties of stilbamidine in conjunction with scanning and chromatographic techniques. The action of stilbamidine on trypanosomes is therefore direct.



GROSSOWICZ, N. & RASOOLY, G. (1958). Evaluation of some trypanostatic agents by means of *Herpetomonas culicidarum*.—*J. Prot.* **5**, 249-251. [Authors' summary modified.] **2779**

A rapid quantitative method for measuring trypanostatic activity by means of the non-pathogenic flagellate *H. culicidarum* is described. Of the known trypanocidal agents tested, pentamidine was the most active; stilbamidine and propamidine being somewhat less active. *H. culicidarum* is more resistant to these agents than are some pathogenic trypanosomes. Two new antifungal antibiotics, nystatin and heptamycin (a candididin-like antibiotic), had powerful trypanostatic activity *in vitro*.

KERR, W. R. (1958). Experiments in cattle with *Trichomonas suis*.—*Vet. Rec.* **70**, 613-615. **2780**

Experimental trichomoniasis was set up in cattle by intravaginal inoculation with *Tr. suis*; the infection was passed without difficulty from heifer to heifer. The experiments showed that clinically *Tr. suis* cannot be differentiated from *Tr. fetus* nor can they be separated by the mucus agglutination test. There is a possibility of infection of cattle from porcine faeces.

—E.V.L.

WALKER, D. J. (1958). Ovine coccidiosis.—*Vet. Insp. N.S.W.* pp. 27-31. **2781**

Outbreaks of diarrhoea attributed to coccidiosis in lambs and weaners are described. Evidence suggests that white globular structures in the intestinal mucosa of sheep infected with coccidia represent infections with *Eimeria* spp. Some of these structures had previously been identified as *Globidium* spp. Diagnosis of coccidiosis is based on diarrhoea with tenesmus and exaggerated movements in the flanks, bluish bloom on dried faeces, and, P.M., the presence of white cyst-like structures in the intestinal mucosa. Ovine coccidiosis is probably of economic importance in the Armidale district.

—R. I. SOMMERVILLE.

HORTON-SMITH, C. & LONG, P. L. (1959). The effects of different anticoccidial agents on the intestinal coccidiosis of the fowl.—*J. comp. Path.* **69**, 192-207. [Authors' conclusions modified.] **2782**

The anticoccidial activities of sulphaquinoxaline, sulphadimidine, nitrofurazone, nicarbazin and a mixture of nitrofurazone and furazolidone (Bifuran) were tested against experimental infections with *E. necatrix*, *E. acervulina*, and *E. maxima*.

When treatment started before infection, nicarbazin, nitrofurazone and the higher strength of Bifuran gave the best protection against *E. necatrix*. The higher strengths of nitrophenide, nitrofurazone and Bifuran gave good protection against established infections with *E. necatrix*.

Sulphaquinoxaline protected chickens against heavy infections with *E. acervulina*. Sulphadimidine and nitrofurazone either completely suppressed or greatly reduced oocyst-production of *E. maxima*.

BURNS, W. C. (1959). The lethal effect of *Eimeria tenella* extracts on rabbits. — *J. Parasit.* **45**, 38-46. [Author's summary modified.] **2783**

Extracts of *E. tenella* oocysts and of the caecum of infected chickens were lethal to rabbits when injected i/v or i/p. The toxin remained stable during storage and was non-dialysable. Sublethal injections of toxic extracts did not form toxin-neutralizing antibodies, neither were they protected against coccidial infection. Serum from chickens recovered from coccidiosis did not neutralize the toxin.

ISHII, S. (1958). Babesiose et theileriose au Japon. [*Babesia* and theileria infections in Japan.]—*Bull. Off. int. Epiz.* **49 bis**, Nos. 11-12 pp. 560-563. [In English. pp. 564-567.] **2784**

Infections by *B. bigemina* and *Th. mutans* were first reported in Japan in 1911 and 1905 respectively. Their incidence, prevention and treatment are discussed.—T.E.G.R.

NEITZ, W. O. (1958). Can corridor disease-recovered cattle serve as reservoirs of *Gonderia lawrencei*.—*Bull. epiz. Dis. Afr.* **6**, 151-154. [Summary in French pp. 193-194.] **2785**

2 oxen were injected with *G. lawrencei*. Erythrocytic parasites could not be demonstrated and in an attempt to induce relapses, both animals were splenectomized. After 70 days and 124 days respectively, parasitized red blood cells were observed. The proportion of infected cells, over a period of 2 years, did not exceed 0.1%. The infection was transmitted by ticks (*Rh. appendiculatus*) to 3 susceptible oxen which developed typical Corridor Disease.

It is concluded that *G. lawrencei* is able to complete its vertebrate life cycle in cattle, which may serve as a reservoir of Corridor Disease after having been splenectomized.

—L. P. JOYNER.



MARKOV, A. (1958). Les maladies à hématozoaires des animaux domestiques (piroplasmoses, babesielloses, nuttallioses, theilerioses, anaplasmoses) et les principes de lutte adoptés contre elles en U.R.S.S. [**Protozoal blood parasites of domestic animals and their control in Russia.**]—*Bull. Off. int. Epiz.* **49** bis, Nos. 11-12 pp. 77-95. [In English. pp. 96-113.] **2786**

An account is given of diseases of domestic animals caused by protozoal blood parasites in Russia; transmission, geographical incidence and control are discussed.—T.E.G.R.

See also *absta.* 2999 (report, Gt. Britain); 3001 (report, Cyprus); 3003 (report, N. Borneo); 3004 (report, Uganda).

## DISEASES CAUSED BY VIRUSES AND RICKETTSIA

PERUS, G. (1958). La lutte contre la fièvre aphteuse par la méthode de l'abattage des malades et contaminés dans le département du Finistère. Bilan général. [**Control of foot and mouth disease in the Finistère Department by slaughter of sick animals and contacts.**]—*Bull. Off. int. Epiz.* **49**, 588-595. **2788**

P. summed up the results of the application of the slaughter policy in the department of Finistère [see *V.B.* **28**, 2818]. 16 primary foci were found during 1957. The total number of animals slaughtered was: cattle 703, pigs 456 and sheep 13, representing 0.25% of the total animal population of the department. The total cost represented 100 francs per head of the cattle population — much less than it would have cost for the annual vaccination of adult cattle alone (excluding youngstock, pigs and sheep). The slaughter policy had been welcomed by all interested parties. Neighbouring departments were willing to adopt the same policy as soon as practicable, and it would then be extended progressively to the whole of Brittany.—W. K. DUNSCOMBE.

VILLA, L. (1959). Terapia e guarigione di un grave caso di miocardite aftosa e sindrome nervosa con glucosio-1-fosfato (SPA) e Largactil (Farmitalia). [**Glucose-1-phosphate and chlorpromazine in the treatment of myocarditis (attributed to foot and mouth disease) and nervous symptoms in a cow.**]—*Progr. vet., Torino* **14**, 252-253. **2789**

In a herd of six cows five were affected with F. & M. disease. One cow subsequently developed myocarditis (attributed to F. & M.

LAINSON, R. (1959). A note on the duration of *Toxoplasma* infection in the guinea-pig.—*Ann. trop. Med. Parasit.* **53**, 120-121. [Author's summary modified.] **2787**

The RH strain of *Toxoplasma* was shown to persist for five years in the brain of a g.pig. The virulence of the strain was unaffected, and only a single passage in mice was needed for its recovery. Sections of the g.pig brain revealed very scanty cysts. As the cysts were of the same size as those found in infections of only a few months' duration, it was concluded that there must be a size limit for the cysts of *Toxoplasma*, and that this limit is reached after only a few months' growth.

disease) and nervous symptoms. Treatment with glucose-1-phosphate and chlorpromazine effected complete recovery.—T.E.G.R.

SERGEEV, V. A. (1958). [**Antibodies in cattle inoculated with foot and mouth disease vaccines.**]—*Proc. Lenin Acad. agric. Sci.* **21**, No. 11. pp. 38-41. [In Russian.] **2790**

Antibody titre 2 weeks after vaccination was determined by mouse-protection tests. 12 cattle were inoculated with ordinary F. & M. disease vaccine, 20 with lapinized vaccine, and 5 with a vaccine prepared from cultures of the virus in calf kidney cells. The day after collection of serum for determination of antibody titre, the cattle and 11 unvaccinated controls were inoculated s/c with 1,000 lethal doses of virus. There was good correlation between antibody titre and the outcome of challenge.—R.M.

BROWN, F. & STEWART, D. L. (1959). **Studies with infective ribonucleic acid from tissues and cell cultures infected with the virus of foot-and-mouth disease.**—*Virology* **7**, 408-418. [Authors' summary modified.] **2791**

Cells infected with F. & M. disease virus were extracted with phenol. These extracts contained infective material which gave rise to F. & M. disease virus in mice and in tissue culture. The infectivity of this material, unlike the virus particle, was readily destroyed by ribonuclease and was not affected by antiviral immune globulins; it is probably a ribonucleic acid. The infective titre of extracts from standard virus preparations was lower than the original infectivity. However, if pig kidney cells were extracted early in the latent phase of infection,



active RNA could be obtained from preparations in which there was only a trace of complete virus. This strongly suggests that the activity of the extracts may have come, in part at least, from non-infective virus materials, possibly virus precursor materials.

SCHMIDT, U. (1958). Über die immunisierenden Eigenschaften des eiadaptierten Maul-und-Klauenseuche-Rindervirus vom Typ O. [Immunizing properties of egg-adapted Type O foot and mouth disease virus.]—*Arch. exp. VetMed.* **12**, 643-656. **2792**

A bovine type O<sub>2</sub> strain was adapted to eggs after 19 cross-passages in unweaned mice. After a further 69 egg passages it was purified and concentrated by ultracentrifuging, or by a chemical method involving concentration with ammonium sulphate and dialysing. Dialysis greatly reduced the virus titre. All affected animals were tested for specific antigen by complement-fixation tests. The virus titre fell till the 16th egg passage, but when 16th passage virus was inoculated into cattle and pigs all developed generalized disease. From the 37th egg passage a concentrated vaccine was prepared using Al<sub>2</sub>OH<sub>3</sub> and 0.04% formalin which protected pigs even in only 1.5 ml. doses but the results in cattle were unreliable. Another concentrated vaccine was prepared without dialysis and inoculated into 3 lots of 7 cattle which were given 5, 2.5, or 1.5 ml. Of those inoculated with 5 ml. five were immune on subsequent challenge, but only one in each of the other 2 lots resisted challenge. After 62 passages the virus lost its pathogenicity for cattle but not for pigs. Because of unsatisfactory results the c.f test could not be used as a diagnostic measure in place of unweaned mice. A vaccine prepared from a combination of a specially virulent O<sub>2</sub> strain and the author's egg-adapted stain showed increased activity on the eggs but not for unweaned mice. It was suggested that there may be an association between the infectivity of the egg-adapted virus for a given species of animal and its immunizing properties for that species.

—W. K. DUNSCOMBE.

TONEVA, V. (1958). [Aujeszky's disease.] pp. 120. Sofia: Durzharno izd. sel'skostop. literatura. [In Bulgarian.] **2793**

Aujeszky's disease was first diagnosed in Bulgaria in 1945 and the virus was isolated in 1947. This monograph surveys 10 years of research on the disease which included a study of 142 infected farms. There are 26 original

photographs of affected mammals and pigeons. An extensive French summary is available.

—R.M.

MORTELMANS, J., PINCKERS, F., HUYGELEN, C. & VANDESTEENE, R. (1958). La rage canine au Ruanda-Urundi. La vaccination sur grande échelle avec le vaccin avianisé Flury LEP. [Canine rabies in Ruanda-Urundi: large-scale immunization with Flury vaccine.]—*Bull. agric. Congo belge* **49**, 1307-1320. [In French. Summary in Flemish.] **2794**

Canine rabies has existed for a long time in Ruanda Urundi and in one area for the years 1954-56 the results were:—(1954) clinically diagnosed 28, lab. positive 8; (1955) clinically diagnosed 8, lab. positive 7; while at Astridia which lies at the centre of a large road system, in 1957 4 cases of furious, and 1 of dumb rabies were diagnosed in dogs and 1 furious in a jackal. The disease is especially marked in the north-west so it was decided to vaccinate dogs at Astridia and domestic animals in the bush, while stray dogs, jackals, etc. were killed.

Vaccination was by a 40% embryo suspension Flury low-egg-passage vaccine produced locally, 2 ml. i/m (twice the dosage advised by WHO). In addition to the vaccination campaign two buffer zones and a sanitary barrier were set up. 15,211 dogs in the bush, and 741 in Astridia were vaccinated. All were examined one month later and no post-vaccinal reactions were found. No case of rabies has been reported since.

—W. K. DUNSCOMBE.

VILLEMOT, J. M. & PROVOST, A. (1958). Précipitation en milieu gélifié du virus rabique par le sérum rabique hyperimmun. [The agar gel diffusion test for diagnosis of rabies.]—*Rev. Elev.* **11**, 387-397. [Summaries in English and Spanish. English summary modified.] **2795**

Study of rabies virus by the agar precipitation test revealed two lines indicating two antigenic complexes of soluble precipitating antibodies having different dimensions. The precipitation test was applied to 64 brain specimens of which 25 were positive by the classical tests and there was no variation in results in any case between the methods.

The two lines of precipitation appear to be specific for rabies virus and never appear when rabies anti-serum is added to the virus of dog distemper.

The choice of the donkey as serum-producer is justified by the abundance of precipitat-



ing antibodies in the hyperimmune serum, as also by the low cost of the animal and its maintenance.

FRAS, A. & GRMOVŠEK, P. (1958). Dijagnostika bjesnoće pomoću gel-difuzionog precipitin testa. [Diagnosis of rabies by the gel-diffusion precipitation test.]-*Vet. Arhiv*. **28**, 253-258. [In Croat. Summaries in English and German.] **2796**

The Ouchterlony agar gel precipitation technique as modified by Mansi [*V.B.* **28**, 445] was studied for the diagnosis of rabies. Before this method could be recommended for routine tests, its value in the early stages of the infection, and to what extent precipitation is affected by autolysis of brain tissue should be determined.—E.G.

I. KUMA, N. (1958). Infection of the one-day old fertile hen's egg with rabies virus. III. Some observations on high egg passage (HEP) strains.—*Jap. J. med. Sci. Biol.* **11**, 31-34. [In English.] **2797**

II. KONDO, A. (1958). Infection of the one-day old fertile hen's egg with rabies virus. IV. A quantitative analysis of infective units for mice (MIU) and for one-day eggs (OIU).—*Ibid.* 45-57. **2798**

III. YOSHINO, K., KONDO, A., KUMA, N. & KITAOKA, M. (1958). Infection of the one-day old fertile hen's eggs with rabies virus. V. Cultivation of different strains in the egg-white-replaced one-day egg (ERO) with special reference to interference between adult-mouse-pathogenic and non-pathogenic strains.—*Ibid.* 59-71. **2799**

I. Flury and Nishigahara strains of rabies virus, passaged over 200 times in chick embryos, lost pathogenicity for adult mice almost completely, but continued to kill one-day-old chick embryos. Both viruses grew faster in one-day eggs than in seven-day eggs. High-egg-passaged (HEP) Nishigahara virus differed from HEP Flury virus in its tendency to produce brain haemorrhages in seven-day-old embryos and in that it also multiplied in adult mouse brain. Massive doses of HEP Nishigahara strain, but not of HEP Flury virus killed mice occasionally.

II. Mouse-fixed CVS rabies virus and its one-day-egg adapted variant were titrated in adult and baby mice and in one-day fertile eggs. For CVS virus the ratio of LD titres for adult and baby mice and one-day eggs was 1:10:0.25, and for the one-day egg-adapted strain 1:10:10.

III. The technique was described of growing adult-mouse-pathogenic CVS strain, and egg-adapted and HEP Flury and Nishigahara strain in fertile eggs incubated for one day in which the egg white had been replaced by saline. The absence of adult-mouse-pathogenic virus in the saline of eggs, infected with both adult-mouse-pathogenic and non-pathogenic (HEP) strains, indicated interference between these variants. This occurred only when the amount of HEP virus exceeded that of adult-mouse-pathogenic virus.—E.G.

RAFYI, A. & RAMYAR, H. (1959). Goat pox in Iran. Serial passage in goats and the developing egg, and relationship with sheep pox.—*J. comp. Path.* **69**, 141-147. [Authors' conclusions modified.] **2800**

Goat pox virus can be easily isolated from infected animals. It maintains its virulence after successive passages in susceptible goats. The virus can be propagated in the developing hen's egg. Sheep pox vaccine does not protect goats against goat pox: but goat pox vaccine affords a solid protection against both goat pox and sheep pox. Egg-adapted goat pox virus can be used as a prophylactic.

DUMBELL, K. R. & NIZAMUDDIN, M. (1959). An agar-gel precipitation test for the laboratory diagnosis of smallpox.—*Lancet* May 2nd, 916-917. [Authors' summary modified.] **2801**

The test is simple and rapid and depends on the demonstration of specific antigen in crusts or vesicle fluid by precipitation with antivaccinal rabbit serum, using the Ouchterlony technique.

TŮMOVÁ, B. & FIŠEROVÁ-SOVINOVÁ, O. (1959). Properties of influenza viruses A/ASIA/57 and A-equi/Praha/56. 1. Agglutination of red blood cells.—*Bull. World Hlth Org.* **20**, 445-454. [Summary in French. Authors' summary modified.] **2802**

In 1956 the authors isolated from a severe epizootic of a respiratory influenza-like disease of horses a virus (A-equi/Praha/56) which in most respects corresponded to, and had a common soluble antigen with, the viruses of type A influenza (Sovinová *et al.*, 1957). Closer study of the strain, however, revealed differences in its ability to agglutinate r.b.c. of several species of animals.

NEGRONI, G. & TYRRELL, D. A. J. (1959). Morphological observations on tissue cultures of epithelial cells infected with influenza-A



**viruses.** — *J. Path. Bact.* **77**, 497-504. [Authors' summary modified.] **2803**

In tissue cultures of calf-kidney epithelial cells infected with various strains of influenza-A virus mitosis was depressed and cells became rounded or vacuolated. The cytoplasm of affected cells was disintegrating or deformed by the presence of bubbles. Later the nucleus and cytoplasm fragmented. These changes occurred some hours after the appearance of new virus at the cell-surface. Although similar changes are produced by means other than virus infection they were regularly associated with infection by all the influenza viruses studied.

OLEŇNIK, N. K., YAZYKOVA, K. N. & MALYARETS, P. V. (1958). [Results of laboratory and field trials of a pigeon test for equine infectious anaemia.]—*Nauch. Trud. Ukrain. Inst. exp. Vet.* **24**, 31-43. [In Russian.] **2804**

The test described previously [*V.B.* **26**, 3782] has now been used on over a thousand horses. Single tests detected 78% of infected horses. Not more than 6% of healthy horses gave false-positive reactions.—R.M.

PORTERFIELD, J. S., HILL, D. H. & MORRIS, A. D. (1958). Isolation of a virus from the brain of a horse with "staggers" in Nigeria. —*Brit. vet. J.* **114**, 425-433. **2805**

A virus of small to medium size was isolated from the brain of a horse dying of "staggers", a highly fatal disease of horses in Southern Nigeria resembling in varying degrees apoplexy, sporadic meningo-encephalitis, meningo-encephalomyelitis, rabies and other nervous disorders of horses. The virus was propagated by serial intracerebral passage in mice. Serological tests failed to reveal any relationship between this virus and any of 37 other viruses causing disease in horses and other animals.

—A. ACKROYD.

SCOTT, G. R. (1959). Mortality of rabbits inoculated with lapinised rinderpest virus.—*J. comp. Path.* **69**, 148-151. [Author's conclusions modified.] **2806**

The case mortality rate of rabbits inoculated with the Kabete substrain of the Nakamura III strain of lapinized rinderpest virus was  $95.96 \pm 2.46\%$ . The rate of mortality was not influenced by the amount of virus inoculated. The relationship between the logarithm of the rate of mortality and the post inoculation interval, (i.e., the Gompertz function) was inversely proportional to the dose. Similarly, the dose influenced the 50% death time.

LOWRIGHT, W. & FERRIS, R. D. (1959). Studies with rinderpest virus in tissue culture. II. Pathogenicity for cattle of culture-passaged virus. —*J. comp. Path.* **69**, 173-184. [Authors' conclusions modified.] **2807**

Changes in pathogenicity when a virulent bovine strain of rinderpest virus was passaged in bovine kidney monolayers are described.

In the first 10 passages there was enhanced virulence (increased mortality rate, decreased time to death and gastro-intestinal lesions of great severity). Mouth lesions, originally rare, became common and contact infection, although very irregularly produced by the parent strain, took place very readily.

Between the 16th and 21st passages a marked reduction in pathogenicity occurred. From the 21st up to the 45th passage no overt clinical signs were detected, but cattle were immunized against subsequent challenge by virulent virus. A proportion of the cattle thus immunized showed mild temperature reactions, the frequency of which depended on the dose of the attenuated strain.

The immunizing titres of culture-virus preparations were comparable to titres determined by the cytopathogenic end-point in tubes. Interference was demonstrated between the attenuated and virulent strains, the time to protection varying from 3 to 5 or more days according to the dose of the excluding agent. Neutralizing antibodies were investigated in the sera of cattle given culture virus 13 to 14 days previously.

The conditions of culture in which attenuation occurred are detailed and discussed.

HUARD, M., ANDRÉ, J. & FOURNIER, J. (1959). Essais de titrage des anticorps neutralisant le virus bovinepestique. [Titration of rinderpest neutralizing antibodies.] — *Ann. Inst. Pasteur* **96**, 506-509. [English summary modified.] **2808**

The technique of Nakamura *et al.* [*V.B.* **25**, 3636] for the demonstration of neutralizing antibodies is reliable in the general conditions of Central Vietnam: it yields good results when testing the efficiency of anti-rinderpest sera and immunity following vaccination or inapparent infection. The use of a protective diluent (Hanks fluid plus foal serum) allows neutralization at 37°C. (instead of at 4°C. as described by Nakamura *et al.*).

PEARSON, J. K. L., KERR, W. R., McCARTNEY, W. D. J. & STEELE, T. H. J. (1958). Tissue vaccines in the treatment of bovine papillomas.—*Vet. Rec.* **70**, 971-973. **2809**

The method of preparing the vaccine in



glycerol-saline suspension was described; the dosage was 2 s/c injections of 10 ml. and 15 ml. at a 14 day interval. Of 197 cattle treated in a 2-year period, 87% with papillomas on the general body surface responded to autogenous vaccines and 76% to non-autogenous vaccine. Teat wart vaccines were effective in only 4 of 12 cattle treated; bull penis growths disappeared after autogenous vaccination in 4 of 5 cases.

—E.V.L.

ROGER, F. & ROGER, A. (1959). Le virus de l'avortement des ovins. Sensibilité à quelques antibiotiques. [**Sensitivity of ovine abortion virus to antibiotics.**]—*Ann. Inst. Pasteur* **96**, 461-467. [Abst. from English summary.] **2810**

Tetracycline and spiramycin were the most effective antibiotics in experimental infection with sheep abortion virus. Penicillin and streptomycin were useful only for the treatment of bacterial secondary infections.

CHONG SUE KHENG. (1958). Swine fever. Its identity, epidemiology and control. — *J. Malay. vet. med. Ass.* **2**, 65-75. **2811**

The history and epidemiology in Malaya since 1934 of an epizootic of pigs due to a virus related immunologically and serologically to United Kingdom and Thai strains of swine fever virus are discussed. Occurrence was widespread but intermittent and all ages contracted the disease although young pigs were more susceptible. Nervous symptoms were not an outstanding feature and histopathological examination of brains did not reveal non-suppurative encephalitis. Local conditions rendered rigid enforcement of standstill orders unrealistic. Incorporation into the existing policy for swine fever control of the customary although illegal practice of local farmers of rapidly disposing of all marketable pigs for slaughter might be beneficial whilst the use of Thai lapinized vaccine and serum may be of value.—A. ACKROYD.

KULESKO, I. I. & AGEEV, I. Y. (1958). [**Variants of the virus of swine fever.**]—*Nauch. Trud. Ukrain. Inst. exp. Vet.* **24**, 15-22. [In Russian.] **2812**

A variant strain of the virus was isolated from an outbreak of swine fever among pigs vaccinated with crystal violet vaccine. Stock hyperimmune serum in doses of 1 ml./kg. body wt. did not protect pigs against this virus, but double the dose did.—R.M.

BAZHAN, A. S. (1958). [**The reaction of anaphylaxis with desensitization in swine fever.**]

—*Proc. Lenin Acad. agric. Sci.* **21**, No. 10 pp. 42-45. [In Russian.] **2813**

This reaction was originated by L. A. Zilber in the U.S.S.R. for the diagnosis of tumours [See *Problems of Oncology, London* **3**, 278 (1957)]. In applying it to the diagnosis of swine fever, guinea-pigs were first sensitized by s/c inj. of 0.5-1 ml. of antigen (blood serum, erythrocyte eluent, cerebrospinal fluid, lymph node extract) from pigs with swine fever. They were next desensitized against non-specific antigens by a series of 3 i/v injections of serum from healthy piglets in doses of 0.2, 0.5 and 1 ml. The final (diagnostic) injection consisted of 0.5-1 ml. serum from the pig under the test, administered i/v 21-25 days after the first (sensitizing) inoculation. When swine fever antibodies were present in the serum, the g. pig died from anaphylactic shock within 15 min.; the g. pig did not react if swine fever antibodies were absent.—R.M.

GRALHEER, H. & FISCHER, K. (1958). Die Stabilität des Virus der infektiösen Schweine-lähmung (Teschener Krankheit) bei verschiedenen Wasserstoffionenkonzentrationen. [**Stability of Teschen disease virus at various hydrogen ion concentrations.**]—*Arch. exp. VetMed.* **12**, 657-661. **2814**

The authors investigated the possibility of purifying and concentrating Teschen disease virus and its stability with varying pH, using chloroform to produce a solution relatively free from albumin and lipid. The solution was heat-labile, and the strengths tested varied from 10 to 20% of a phosphate-buffer centrifuged extract of brain and spinal cord, while the stability was tested at a pH of from 3 to 11. The neutralized solution was injected either intranasally (8-10 ml.) or intracerebrally (1-2 ml.) and only those pigs were considered positive which showed the characteristic inflammatory changes in the c.n.s.

The results showed that (a) when kept at 0°C. for 72 hours the virus is stable between pH 4 and pH 11; (b) precipitation between pH 4 and pH 5 can be used for purification.

—W. K. DUNSCOMBE.

LARIN, N. M. (1959). "**Nervous distemper**" in dogs. I. Its features and experimental transmission.—*Vet. Rec.* **71**, 447-449. [Abst. from author's discussion.] **2815**

This study suggests that, by passaging subcutaneously through dogs and ferrets, a "non-neurotropic" strain of distemper virus can be "trained" to produce in dogs a condition known



as "nervous distemper". Even more striking is the high incidence of paralysis in weaned puppies, and there is no escape from the conclusion that a close correlation exists between the occurrence of the paralysis and the age of the dog. So it seems that a strain of distemper virus can be "non-neurotropic" and "neurotropic", this being largely dependent on the age of the infected dog.

DOUGLAS, G. W. (1958). *Myxomatosis in Victoria*.—*J. Agric. Vict.* 56, 779-790. 2816

This very useful summary of the usefulness of myxomatosis for rabbit control in Victoria, covers all aspects of the disease from the time of its release in 1950 up to the present. The build up of genetic resistance in the rabbit and the attenuation of the virus in the field are discussed, together with useful data comparing the percentage mortality in the field with that in the laboratory. Mosquitoes are still the principal vectors, although others such as the small black-flies (*Simuliidae*) may have been important in certain areas. The prediction that myxomatosis will continue to be a useful means of rabbit control for some time seems justified provided continual releases of virulent strains of virus are made.—W. R. SOBEY.

KRAFT, L. M. (1958). *Observations on the control and natural history of epidemic diarrhea of infant mice (EDIM)*.—*Yale J. Biol. Med.* 31, 121-137. [Author's summary modified.] 2817

The establishment of a colony of CFW mice free from epidemic diarrhoea of infant mice is described. Measures and techniques devised to control the airborne cross-infection that complicates work on this disease, and evidence for successful control, are presented.

A 7-day allowable incubation period was found 100-1,000 times more sensitive than a 3-day period in detecting the virus. Increasing the incubation period up to 10 days had no advantage. Using the control measures and allowing a 7-day incubation period for testing, the fate of ingested virus was studied in unweaned mice and in their dams free from diarrhoea.

Factors pertinent to an understanding of the natural history of the infection in unweaned mice are discussed.

MARXER, A., GIOBBIO, V., MAGRI, S., MONDINO, A., OLIVETTI, S. & SEGRE, G. (1958). *Immunisation contre la maladie de Newcastle (animal-virus) avec le virus du Mosaic du tabac (plant-virus)*. [Immunization

against Newcastle disease (animal virus) with tobacco mosaic virus (plant virus).]—*Naturwissenschaften* 45, 15-16. [In French.] 2818

Five of six chicks injected i/m with 0.5 ml. of tobacco leaf extract containing mosaic virus, remained healthy after contact with fowls infected with Newcastle disease. The sixth, one of three injected with mosaic virus stored for more than six months died two weeks after exposure.

In the Argentine immunity to F. & M. disease lasting up to two years was claimed in cattle injected with mosaic virus preserved with 0.1% thymol. 35 immunized cows driven from a ranch in one district to another remained healthy, whereas all 135 non-immunized calves in the same herd became infected. 875 immunized cows remained healthy for two years despite repeated outbreaks of F. & M. disease in the vicinity.

All 190 sheep vaccinated with 2 s/c doses of 5 ml. each of mosaic virus remained healthy whereas a large proportion of about 1,800 non-immunized sheep of the same flock developed F. & M. disease.—E.G.

CIACCIO, G. (1959). *Essai de neutralisation du virus de Newcastle par le sérum de lapin et le lait de vache*. [Attempts to neutralize Newcastle disease virus with rabbit serum and cow's milk.]—*Ann. Inst. Pasteur* 96, 500-502. [English summary modified.] 2819

Fresh normal rabbit serum possesses a neutralizing capacity towards NDV. Heating at 56° for 39 min. destroys this antiviral property. No activity against NDV was demonstrable in cow's milk.

HANSON, L. E. & ALBERTS, J. O. (1959). *Factors affecting interference with Newcastle disease infection*.—*Amer. J. vet. Res.* 20, 352-356. [Authors' summary modified.] 2820

Simultaneous exposure of chickens to infectious bronchitis virus (IBV), strain 70768, and Newcastle disease virus (NDV, Strain 11914, resulted in interference with Newcastle disease by IBV. The interference was indicated by absence of clinical signs, decreased antibody formation, and reduced mortality. Administration of IBV 24 hours before NDV also caused interference. The period of interference was 16 to 21 days. I/v administration of heat-treated, normal allanto-amniotic fluid and horse serum shortly before intranasal exposure to NDV decreased susceptibility to NDV. Increased NDV susceptibility was demonstrated two weeks after simultaneous exposure to NDV and IBV.



MEDGYESI, G. (1958). Konzentrierung des Newcastle-Virus mittels Thermodiffusion. [Concentration of Newcastle disease virus by thermodiffusion.] — *Arch. exp. VetMed.* **12**, 662-667. 2821

The apparatus used for the diffusion method of concentrating N.D.V. consisted essentially of a condensation apparatus with two containers. The virus used was isolated from conjunctivitis in man. 3 series of tests were carried out at various concentrations of haemagglutinating units for periods of 7, 5½, and 10 hours and the experiments were carried on in all for nearly 2 years.

M. agrees that the action of the thermodiffusion method depends on the dimensions of certain parts of the apparatus and on the technique, but he states that a considerable concentration of N.D.V. was obtained compared with the original concentration in allantoic fluid. —W. K. DUNSCOMBE.

VOLKERT, M. & MATTHIESEN, M. (1958). Ornithosis-related antigens from *B. anitratum* in the serological diagnosis of ornithosis. I.—*Acta path. microbiol. scand.* **44**, 278-286. [In English.] 2822

The authors demonstrated previously that the antigens of psittacosis virus and *Bact. anitratum* were related: animals infected with psittacosis produced antibodies which reacted with *anitratum* antigen, but *Bact. anitratum* infection did not produce antibodies which react with psittacosis antigen [*Acta path. microbiol. scand.* **39**, 117 & **41**, 135]. The value of *anitratum* antigens in c.f. tests for psittacosis was investigated using 172 human sera. While reliable results were obtained in proven cases of psittacosis, 3% of 500 sera from human beings with other illnesses gave false-positive results to the bacterial antigen.—R.M.

DAVIS, D. E. & WATKINS, J. R. (1959). The effect of chlortetracycline on the immunological response of turkeys infected with ornithosis.—*J. infect. Dis.* **104**, 56-60. [Authors' summary modified.] 2823

Ornithosis (psittacosis) was transmitted from infected to healthy poult, but 100 g. of chlortetracycline per ton of feed prevented this. Chlortetracycline at 200 g. per ton prevented mortality and the development of lesions. Treated poult did not react to the direct c.f. test after re-infection. Adult turkeys that recovered from psittacosis, with or without treatment with chlortetracycline, developed indirect c.f. antibodies and resisted challenge.

PAGE, L. A. (1959). Measurement of pathogenicity of turkey ornithosis agents for mice. —*Avian Diseases* **3**, 23-27. [Author's summary modified.] 2824

Six psittacosis viruses were characterized in terms of mouse pathogenicity by the i/p route of inoculation. An index of pathogenicity based on the log. I.D.<sub>50</sub>-log. L.D.<sub>50</sub> difference was calculated for each virus. The pathogenicity was measured independently of the concentration of the virus. Use of this test for detecting changes in the pathogenicity of viral populations was suggested.

McKERCHER, D. G. & WADA, E. M. (1959). Studies of the distribution and host range of *Miyagawanella bovis*.—*Cornell Vet.* **49**, 233-241. [Authors' summary modified.] 2825

A virus identified as a strain of *Miyagawanella bovis* was isolated from the faeces of cattle in California. Efforts to recover this agent from cattle in S. Africa and in several other countries were unsuccessful, as were attempts to recover it from sheep, goats and deer in California.

ARMSTRONG, W. H. (1959). A slide smear technique for the diagnosis of laryngotracheitis.—*Avian Diseases* **3**, 80-84. [Author's summary modified.] 2826

A slide smear technique is described for the diagnosis of laryngotracheitis wherein tracheal and conjunctival epithelial cells are smeared on a slide and stained with Giemsa stain. When suitable specimens are examined, intranuclear inclusion bodies characteristic of laryngotracheitis are readily detected. The accuracy of this method compares very favourably with that of the slower technique of vent inoculation.

ANDREWES, C. H. & WORTHINGTON, G. (1959). Some new or little-known respiratory viruses. —*Bull. World Hlth Org.* **20**, 435-443. [Summary in French. Authors' summary modified.] 2827

The characters and relationships of a number of viruses of potential importance in human respiratory diseases are reviewed. Among the myxoviruses discussed are viruses related to influenza A (swine and horse influenza, British and Czechoslovak duck influenza, fowl plague), influenza B and C, mumps and Newcastle disease, and the para-influenzas. The ECHO viruses, 2060 and JH viruses, chimpanzee coryza agent and the common cold are also considered. In the final section of the paper the authors described attempts to transmit four myxoviruses to lab. animals.



ISAACS, A. & BURKE, D. C. (1958). **Mode of action of interferon.** — *Nature, Lond.* **182**, 1073-1074. **2828**

Continuing their studies on interferon [see *V.B.* **28**, 446 & 2131; **29**, 383] the authors found that live virus produced it in cells previously treated with interferon. It was suggested that the mode of action of interferon was to deflect virus synthesis from the production of a normal intermediate protein towards the production of interferon.—R.M.

DOMÁN, I. (1959). A szarvasmarhák rickettsiosisos szaruhártya - kötőhártya-agyulladása. [*Rickettsial keratoconjunctivitis in cattle.*]—

See also absts. 2998, 2999 (reports, Gt. Britain); 3001 (report, Cyprus); 3002 (report, Mauritius); 3003 (report, N. Borneo); 3004 (report, Uganda); 3005 (report, Netherlands); 3010 (book, Teschen disease); 3013 (book, diseases of swine).

## IMMUNITY

BENACERRAF, B., SEBESTYEN, M. & COOPER, N. S. (1959). **The clearance of antigen antibody complexes from the blood by the reticulo-endothelial system.** — *J. Immunol.* **82**, 131-137. [Authors' summary modified.] **2830**

Soluble complexes of antigen with rabbit antibody interfered, through competition, with the phagocytosis of carbon particles by the reticulo-endothelial system, when injected i/v into mice and rabbits. Evidence is presented that at least the larger soluble antigen-antibody aggregates were phagocytized by the Kupffer cells of the liver. The significance of these findings is discussed in relation to the localization of antigen-antibody complexes in the lesion of serum sickness.

NORDBRING, F. & OLSSON, B. (1957/58). **Electrophoretic and immunological studies on sera of young pigs. I. Influence of ingestion of colostrum on protein pattern and antibody titre in sera from suckling pigs and the changes throughout lactation. II. The effect of feeding bovine trypsin inhibitor with porcine colostrum on the absorption of antibodies and immune globulins. III. Transfer of protein fractions and antibodies to the newborn pig by ingestion of porcine serum with a study of the effect of bovine trypsin inhibitor.** — *Acta Societatis Medicorum Upsaliensis* **62**, 193-212; **63**, 25-41 & 42-52. **2831**

Protein composition of serum from birth to 9 weeks of age was studied in 56 piglets from 10 litters. Two sows were inoculated during gestation with paratyphoid A vaccine, and the H agglutinin titres determined in their piglets.

*Mag. állator. Lapja* **14**, 6-10. [In Hungarian. Summaries in English and Russian.] **2829**

In Hungary an outbreak of epizootic keratitis and conjunctivitis caused by rickettsia affected 42.6% of the young and 17.4% of the adult cattle of 17 herds during the hottest summer months. After recovery the disease left irreparable changes in the eyes of 12.2% of the young and 14.1% of the adult cattle. In trials the disease was successfully transmitted mechanically to 2 of 6 calves, and to a foal, which latter induced natural infection in 18 of his mates. An account is given of the symptoms, methods of diagnosis and the results of treatment with 3% chloramphenicol and oxytetracycline respectively.—A. SEBESTENY.

The serum gamma-globulin decreased from birth to 4 weeks and then remained constant or slightly increased. Antibody titres decreased during the period of observation.

Porcine colostrum, containing paratyphoid H agglutinins, was given by stomach tube to 44 pigs between 1 and 3 days old. Some were given bovine trypsin inhibitor with the colostrum. Absorption of agglutinins at birth varied from 4 to 21% of the amount given, while at 72 hours it was 0.2-3%. Addition of trypsin inhibitor to colostrum resulted in higher amounts of globulins in the serum. Absorption of protein from the gut was inversely proportional to the concentration of non-protein nitrogen in the serum.

When serum from adult pigs immunized with paratyphoid A vaccine was given by stomach tube to 31 piglets, 4-15% of antibody was absorbed by those a few hours old, and none by those 40 hours old. Piglets receiving bovine trypsin inhibitor with the serum had relatively greater electrophoretic fractions in the serum.—R.M.

MCCANCE, R. A. & WIDDOWSON, E. M. (1959). **The effect of colostrum on the composition and volume of the plasma of new-born piglets.** — *J. Physiol.* **145**, 547-550. [Authors' summary modified.] **2832**

The effect of maternal colostrum on the volume and composition of the plasma was studied in new-born piglets. The absorption increased the plasma volume by 30%, and the concentration of globulins in the plasma rose from 0.93 to 3.58 g./100 ml. The absorption of intact protein must have important physiological as well immunological effects.



CHANG, T. S., RHEINS, M. S. & WINTER, A. R. (1959). The significance of the bursa of Fabricius of chickens in antibody production. 3. Resistance to *Salmonella typhimurium* infection.—*Poult. Sci.* **38**, 174-176. 2833

Mortality within 3 days of i/m inj. of *S. typhimurium* was 100% in 8-week-old chicks from which both spleen and bursa of Fabricius had been removed, 70% in those without bursa of Fabricius, 17% in splenectomized chicks, and 11% in controls.—M.G.G.

AMIES, C. R. (1959). The use of topically formed calcium alginate as a depot substance in active immunisation.—*J. Path. Bact.* **77**, 435-442. [Author's summary.] 2834

Sodium alginate, the salt of a polymer of mannuronic acid, reacts with soluble calcium salts to yield a precipitate of insoluble calcium alginate. The same reaction takes place when a sodium alginate solution is introduced into living tissue, the calcium ions being supplied by the tissue fluid itself. The insoluble alginate remains at the site of inoculation for some time, giving rise to a foreign-body type of tissue reaction. If an antigen such as diphtheria toxoid is incorporated in the alginate solution prior to injection it is slowly liberated from the insoluble material and a prolonged antigenic stimulus is obtained.

In comparison with conventional depot substances such as alum and the Freund adjuvants, sodium alginate has the following advantages: it is a stable transparent solution having protective colloid properties; it is not itself antigenic; and it does not give rise to necrosis or abscess formation in the tissues.

CAMPBELL, B. & PETERSEN, W. E. (1959). The isolation, purification, and quantitation of antibody from cow's milk.—*Fed. Proc.* **18**, 22. 2835

Antibody was produced in the milk of a cow by injecting, *via* the teat canal of each quarter, 1 ml. raw egg white at parturition and on the 7th day. Milk was collected on the 8th day and globulin isolated. This globulin, serum globulin (obtained from the cow on the same day) and serum globulin from sensitized rabbits were studied by glass bead partition chromatography. The serum and purified serum antibody from the rabbit produced lines on double-diffusion agar plates; the cow's serum and milk and their purified antibodies did not. Purified serum and milk antibodies from the cow inhibited lines of a test antibody system, denoting predominance of incomplete antibody in the cow's globulin. Similar separation (by chroma-

tographic partition of antibody from the globulin of milk of immunized cows was made, using *Salmonella pullorum* antigen and whole cell suspensions of the organism for charging the bead columns. Findings are taken to confirm that plasmacytosis and antibody production occur in the udder of the parturient cow.

—T.E.G.R.

BARNES, J. M. (1959). Antitoxin transfer from mother to foetus in the guinea-pig.—*J. Path. Bact.* **77**, 371-380. [Author's summary modified.] 2836

Diphtheria antitoxin is transferred from immunized g.pigs to their foetuses after the 35th day of gestation until almost full term (70 days).

If an actively immunized mother has a stable antibody titre throughout gestation the titre of the mother and foetus is constant throughout gestation, and at birth.

If the mother is actively immunized during pregnancy then the ratio of the antibody titre of mother and young at the time of birth cannot be correlated with the stage of gestation at which the mother was inoculated.

If homologous antitoxin is injected into the uterine lumen between the 44th and 63rd days of gestation, it appears in the maternal and foetal serum and in the foetal fluids within 24 hours. Evidence is provided that absorption occurs through the vitelline blood-vessels, and that little or no antitoxin is absorbed from the gut. Heterologous (refined horse tetanus) antitoxin injected into the uterine lumen at the 63rd day of gestation is also absorbed by the foetuses, presumably by the same route. The concentration quotient for heterologous antitoxin in the foetal serum is far lower than that for homologous antitoxin; for the amniotic fluid and foetal stomach contents the concentration quotients for homologous and heterologous antitoxins are approximately equal.

BEHAR, A. J. & TAL, C. (1959). Experimental liver necrosis produced by the injection of homologous whole liver with adjuvant.—*J. Path. Bact.* **77**, 591-596. [Authors' summary modified.] 2837

Widespread necrosis of liver parenchyma occurs as an apparently specific response in some g.pigs and hamsters injected with homologous-liver homogenate in Freund's adjuvant. The lesions are particularly common in young g.pigs. They do not occur in g.pigs or hamsters injected with homologous-liver homogenate in saline, with adjuvant alone, or in normal control animals. The reticulo-endothelial prolifera-



tion and degenerative liver-cell changes commonly associated with the necrosis appear to be non-specific, as they occur in animals injected with material that does not contain liver.

It is concluded that liver tissue is a weak or dormant antigen, able to manifest its antigenicity when it is injected with adjuvant, in which circumstances it elicits the production of anti-liver antibodies and consequent iso-allergic liver necroses.

It is also suggested that some forms of extensive liver-necrosis may be due to auto-immunization with liver-cell components slightly modified antigenically.

HENLY, W. S., CRAWFORD, E. S., DE BAKEY, M. E. & HALPERT, B. (1959). *The fate of equine-to-canine arterial heterografts.*—*Arch. Path.* **67**, 264-269. [Authors' summary modified.] **2838**

Freeze-dried equine common carotid artery was grafted into the canine abdominal aorta. Gross and microscopic studies were made of the grafts removed after 15 and 60 days and 15 months, respectively. Aneurysmal dilation of the graft portion occurred after 60 days, and by the 15th month the graft was completely replaced by host tissue.

TURK, J. L. (1959). *The immune-adherence activity of normal serum.*—*Brit. J. exp. Path.* **40**, 97-106. [Author's summary modified.] **2839**

Immune-adherence was shown to occur with normal g.pig, rabbit and human sera against *S. typhi*, *Sh. flexneri*, *E. coli*, the El Tor vibrio, *Staph. aureus*, *E. rhusiopathiae*, and starch. The total activity appears to be the resultant of a non-specific activity and a specific activity against the particular antigen. The non-specific activity is in the euglobulin whereas much of the specific activity is in the

pseudoglobulin. The non-specific activity is absorbed by a wide range of polysaccharides and has many properties in common with properdin, and seems closely related to the complement-fixing activity in normal serum described by Mackie & Finkelstein (1930). It is present in the serum of the new-born calf before suckling and in that of the unweaned rabbit. The specific activity appears to be antibody and, though absent in month-old rabbits, has developed by the second month.

KIDDY, C. A., STONE, W. H., TYLER, W. J. & CASIDA, L. E. (1959). *Immunological studies on fertility and sterility. I. An attempt to produce hemolytic disease in cattle by iso-immunization.*—*Acta haemat.* **20**, 236-245. [Authors' summary modified.] **2840**

New born calves failed to show definite evidence of haemolytic disease after ingesting colostrum containing maternal antibodies produced against the sire's blood and reactive *in vitro* with the calves' red blood cells.

Except in one experiment, serum obtained from the calf after sucking colostrum containing antibodies reacted with the bull's cells, indicating that antibodies had been passively transferred to the calf through the colostrum. However, no antibodies specific for antigens of the calf's own cells were detectable in its serum even though these antibodies were ingested with the colostrum.

It appears that the mechanism which protects the new-born calf from haemolytic disease is the absorption or neutralization of ingested antibodies by tissue or soluble antigens, thus preventing these antibodies from reaching the erythrocytes and causing their destruction.

There was no adverse effect on the fertility of heifers as a result of their iso-immunization, before breeding, with the blood of the bull to which they were bred.

See also absts. 2725 (staphylococcal antitoxin in blood & milk); 2745 (fowl typhoid vaccine); 2748 (Br. suis); 2751 (*Leptospira pomona* vaccine); 2775 (c.f. and trypanosoma immobilization tests in trypanosomiasis); 2790-2792 (F. & M. disease); 2794 (rabies); 2795-2796 (tests for rabies); 2804 (pigeon test for equine infectious anaemia); 2807-2808 (rinderpest); 2811 (swine fever); 2818-2820 (Newcastle disease); 2823 (psittacosis); 2852 (*Haemaphysalis*); 2864 (strongyloidiasis); 2865 (trichinosis); 2882 (Rous sarcoma); 2919 (swine fever); 2999 (report, Gt. Britain); 3001 (report, Cyprus); 3002 (report, Mauritius); 3003 (report, N. Borneo); 3004 (report, Uganda); 3006 (report, U.S.A.); 3007 (book, brucellosis); 3008 (book, mycoses); 3009 (book, bartonella).

## PARASITES IN RELATION TO DISEASE [ARTHROPODS]

GOJMERAC, W. L., DICKE, R. J. & ALLEN, N. N. (1959). *Factors affecting the biology of cattle lice.*—*J. econ. Ent.* **52**, 79-82. [Authors' summary modified.] **2841**

Studies of populations of the biting louse, *Bovicola bovis* on 12 heifers representing four dairy breeds revealed a cyclic occurrence with peak infestation during late January or early

February, Holstein cattle being more heavily infested than Guernsey, Jersey or Brown Swiss. Intensity of infestation and cyclic occurrence were not associated with individual hair diameter or length, with density of hair per unit of skin surface, or with ether-alcohol soluble skin secretions. A positive correlation, however, was found between hair thickness and population



level within the Holstein breed. The amount of skin scurf was greater during summer than during winter when louse populations were high.

STAMPA, S., FIEDLER, O. G. H. & DU TOIT, R. (1958). **The protection of sheep against blowfly strike. V. The duration of protection of certain insecticides under field conditions.** — *Onderstepoort J. vet. Res.* **27**, 549-581. 2842

A critical study of the protection afforded to sheep by BHC, diazinon, aldrin and dieldrin against blowfly strike in the field is recorded. The factors influencing duration of protection are discussed and it was concluded that the density of blowflies present, which constitutes the degree of challenge to which the particular insecticide on the sheep is exposed, is one of the main factors. Protection afforded by the Mules operation was compared with that afforded by use of the above insecticides.

GANSSE, A. W. E. (1956). **Warble flies and other Oestridae. Biology and control.** pp. 63. Chcam: Hide and Allied Trades Improvement Society. 2843

Dr. Gansser has worked on the warble fly problem for 40 years and his book is a mine of information, well presented and illustrated. Not everyone would agree that there are five larval stages of *Hypoderma* and it is a pity that the recent development of organo-phosphorus systemic insecticides has outdated some of Gansser's comments on control measures, but this remains a splendid little book. Every aspect of ox warble fly biology and control is covered and there is also a section on the oestrids of other animals. There is an extensive bibliography and the text includes French abstracts. —W. N. BEESLEY.

BOLLE, W. R. & OTTE, B. (1958). Erfahrungen bei der oralen Anwendung von Neguvon gegen die Wanderlarven der Dasselfliege. [**Orally given Neguvon against migrating warbles.**] — *Vet.-med. Nachr.* No. 4. pp. 211-230. 2844

Neguvon (Bayer L13/59) given orally in 3 doses reduced the incidence of warbles in 2,200 cattle by 97%; the deaths of 2 animals were attributed directly to the drug although toxic side effects were normally slight. This method of treatment, preferably in November–December, destroys the migrating larvae before they can pierce the skin.—E.V.L.

BOLLE, W. R. (1958). Neue Wege zur Bekämpfung der *Dermatobia hominis* mit

Neguvon und Asuntol. [**Neguvon and Asuntol for the control of *Dermatobia hominis* infestation in domestic animals.**] — *Vet.-med. Nachr.* No. 4. pp. 193-206. 2845

All dermatobia larvae in the skin were destroyed by Neguvon when administered orally, 50 mg./kg., either mixed in the food or in 10% solution in water. The compound was equally effective when applied as a 1% spray, 2-3 litres per animal. Spraying cattle every 3 weeks with a 0.075% soln. of Asuntol (Bayer 21/199) greatly reduced infestation within 2 months and eradicated it in 6 months.—E.V.L.

DEFOLIART, G. R., GLENN, M. W. & ROBB, T. R. (1958). **Field studies with systemic insecticides against cattle grubs and lice.** — *J. econ. Ent.* **51**, 876-879. 2846

270 calves were treated orally with the insecticides in bolus form. Both Dow ET-57 and Dowco-109 gave over 90% control of *Hypoderma lineatum* and *H. bovis*. Dow ET-57 appeared equally effective at 85 mg./kg. and at the recommended dosage of 110 mg./kg.

Dimethoate gave variable control of warbles at 10 and 15 mg./kg. although it killed more lice (*Linognathus vituli*) than Dow ET-57 or Dowco-109.

61-82% control of warbles followed the addition of Dowco-109 and Dow ET-57 respectively to the feed of 160 calves. Dowco-109 was given at the rate of 2.0-15 mg./kg. of feed for 1-10 days and Dow ET-57 at 55 mg./kg. of feed for 2 days [see also *V.B.* **28**, 1470-1472 & 3268.]

Bayer 21/199 sprayed on the backs of cattle at concentrations of 0.25 and 0.50% gave almost complete control of lice for over 5 months. Sprays of 0.25%-0.75% Dowco-109 gave good louse control for 3-4 months; neither Dowco-109 nor Bayer 21/199 sprays gave consistent 100% warble control at these concentrations, although they both gave 80% control at 0.5% spray concentration in single tests [see also *V.B.* **28**, 3997].—W. N. BEESLEY.

KOLOMIETS, Y. S., ALFIMOVA, A. V., KAPUSTIN, I. K. & EMETS, M. I. (1958). [**Further studies on the action of hexachlorane (BHC) aerosols on sheep and their use for the prophylaxis of *Oestrus ovis* infestation.**] — *Nauch. Trud. Ukrain. Inst. exp. Vet.* **24**, 247-253. [In Russian.] 2847

Exposure of sheep for 15-20 min. to an aerosol of 20-50 ml. 4% solution of BHC in "solyar oil" per cu. mm. of air did not cause salivation, coughing or rhinitis, but changes in blood picture and the presence of endocardial



haemorrhages after treatment were taken as evidence of toxicity. The treatment, repeated at fortnightly intervals, did not protect sheep from invasion with larvae of the nostril fly, and was therefore quite unsatisfactory.—R.M.

ALFORD, H. G. & JONES, C. M. (1959). **Horn fly control with Bayer 21/199.**—*Agric. Chemic.* 14, No. 2 pp. 53 & 127. 2848

During summer more than 5,000 beef cattle were sprayed with Bayer 21/199 to determine the effect on horn flies (*Lyperosia irritans*) and larvae of warble fly. This report describes the effect on horn flies and concludes that 0.25 and 0.5% sprays gave a degree of control comparable to that obtained with 0.25% methoxychlor sprays. [See also *V.B.* 29, 1818].—R.M.

TETLEY, J. H. (1958). **The sheep ked, *Melophagus ovinus* L. I. Dissemination potential. II. Keds acquired by a lamb from its mother.**—*Parasitology* 48, 353-363 & 364-374. 2849

1. The dissemination potential (d.p.) (percentage of parasite population on the fleece surface) was constantly greater on a 2-year-old Romney cross ram than on an 8-month-old Southdown cross ram. Bright sunshine caused an increase in the numbers of surface keds and this was independent of the type of wool. Keds migrated readily between the two sheep used in the test; the overall ked population gradually fell when most of the keds were originally on the high d.p. host and rose when they were mainly on the low d.p. sheep.

II. There was a constant passage of keds from mother to lamb especially while the lamb was very young and during periods of bright sunshine. Male keds tended to predominate on the posterior part of the ewe, probably because they were more active than the females. [See also *V.B.* 19, 1295 and 20, 3052.]

—W. N. BEESLEY.

TASSELLI, E. (1958). **La paralisi da zecche (?) in provincia di Matera. [Tick paralysis (?) in Matera, Italy.]**—*Vet. ital.* 9, 909-912. 2850

In cattle, sheep and goats, heavily infested with *Dermacentor* ticks, there was restlessness, staggering gait and intense anaemia. Some animals went down and were unable to rise again. Symptoms, which were severest in those animals heavily infested about the head region, disappeared after removal of the ticks. In calves under 1 year there was marked torsion of the neck which persisted for some days. Horses and pigs on the same tick-infested pasture as the cattle were unaffected.—T.E.G.R.

FOGGIE, A. (1959). **Studies on the relationship of tick-bite to tick pyaemia of lambs.**—*Ann. trop. Med. Parasit.* 53, 27-34. [Author's summary modified.] 2851

Histological sections of *Ixodes ricinus* attached to sheep skin show that tick-bite reaction is a foreign-body reaction to the cement substance enclosing the mouth-parts and a liquefactive change in the deeper layers of the dermis beyond the apex of the hypostome. The anti-coagulant and oedema-producing properties of tick saliva were confirmed.

Neither the feeding of ticks on lambs' skin contaminated with staphylococci nor the intra-dermal inoculation of staphylococci along with salivary-gland extract in both normal and neutropenic lambs led to secondary abscess formation.

These experiments and the absence of correlation between the incidence of pyaemia and the weight of the tick infestation suggest that the causal staphylococcus gains access to the bloodstream by some route other than tick-bite wounds.

RIEK, R. F. (1958). **Studies on the reactions of animals to infestation with ticks. III. The reactions of laboratory animals to repeated sublethal doses of egg extracts of *Haemaphysalis bispinosa* Neumann.**—*Aust. J. agric. Res.* 9, 830-841. 2852

Small laboratory animals were immunized or sensitized with saline extracts of *Haemaphysalis bispinosa* eggs.

The immunized animals were given weekly or twice weekly i/v injections of the extract for 3 weeks. This protected them against toxic doses of egg extract but not against the attachment of larval ticks.

The sensitized animals received 3 or 5 s/c or i/v injections on successive days. A skin reaction was produced in response to i/d injection of egg extract and the animals were protected against the attachment of larval ticks.

—N. P. H. GRAHAM.

MURRAY, M. D. (1959). **A clinical case of demodectic mange in a sheep.**—*Aust. vet. J.* 35, 93. 2853

In May 1952, a sheep with severe demodectic mange developed thick scabs and pustules on the coronets, nose, tip of the ears and around the eyes. Mites were numerous in the pustules. A concurrent *Damalinia ovis* infestation masked lesions on the body. The lesions on the head and feet cleared up spontaneously in February and March 1953 but recurred around the eyes two months later.—N. P. H. GRAHAM.



SINCLAIR, A. N. (1958). A field trial for the control of itch mite (*Psorergates ovis*) of sheep.—*Aust. vet. J.* **34**, 405-410. 2854

Small groups of marked infested sheep were treated with the main flocks in a shower dip. The marked sheep were subsequently run as an isolated flock and kept under observation for 11 months. Dip washes, used at starting concentrations of 0.0125% dieldrin and 0.04% diazinon, failed to control itch mite. A mixed wash of 0.0125% dieldrin and 1.0% calcium polysulphide eradicated the mites. Although the dieldrin lime-sulphur dipped sheep were in contact with the dieldrin and diazinon dipped sheep for 11 months they did not become infested. Some difficulty was experienced in finding mites on infested sheep during the midsummer examination. The lime-sulphur dip did not damage the wool nor adversely affect the sheep.

—N. P. H. GRAHAM.

BUGYAKI, L. & LANCKRIET, H. (1959). Waarnemingen over demodecosis bij honden te Stanleystad. [Demodectic mange in dogs in Stanleyville, Belgian Congo.]—*Vlaams diergeneesk. Tijdschr.* **28**, 133-139. [In Flemish. Summaries in English, French and German.] 2855

The disease has been regularly reported in Stanleyville since 1955.

The authors failed to transmit the disease by direct contact, scarification, instillation into the connective tissue, or by feeding material containing the live mites. Systemic treatment with yatren (chinofon sodium), carbazone (a pentavalent arsenical compound), stovarsol (acetarsol), trichlorethylene, phenamidine,

ethidium bromide, "Trolene" (Dow ET-57) and BHC was unreliable without using toxic doses. BHC applied locally, however, gave satisfactory control.—F.E.W.

SWEATMAN, G. K. (1958). On the life history and validity of the species in *Psoroptes*, a genus of mange mites.—*Canad. J. Zool.* **36**, 905-929. 2856

S. described the stages in the life cycle of *Ps. cuniculi* and other species in the genus. Host specificity is disproved but differences exist in individual susceptibility. He proposed that the six auricular types of psoroptic mites be reduced to two, and the five kinds of body mites to four. He discussed the phylogenetic relationship of these species with each other and with the species in *Chorioptes*, *Caparimia*, and *Otodectes*.—C. L'ECUYER.

RODRIGUEZ, J. L., JR. & RIEHL, L. A. (1958). Comparisons of diazinon, dicapthion, Chlorobenzilate, and Kelthane for control of the chicken mite in hen houses. — *J. econ. Ent.* **51**, 911. 2857

Spray mixtures were prepared from emulsifiable liquid concentrates of Chlorobenzilate, diazinon and Kelthane and from 50% wettable powder of dicapthion. Roosts, nest boxes and walls were sprayed and the numbers of *Dermanyssus gallinae* noted after treatment. 0.5% diazinon and dicapthion gave 100% control for 15 weeks; 0.25% diazinon almost complete control for 13 weeks, but 0.25% dicapthion for only 3 weeks [see also *V.B.* **28**, 3277]. The chlorinated hydrocarbons Chlorobenzilate and Kelthane had no effect on the mite infestation at spray concentrations of 0.5-2.0%.—W. N. BEESLEY.

See also *absts.* 2999 (report, Gt. Britain); 3005 (report, Netherlands); 3011 (book, acari).

## PARASITES IN RELATION TO DISEASE [HELMINTHS]

GRETILLAT, S. (1958). Contribution à la connaissance des hôtes intermédiaires et à l'étude du cycle évolutif de *Paramphistomum cervi* (Schränk, 1790), (*Trematoda*, *Paramphistomidae*), à Madagascar. [The intermediate hosts and life-cycle of *Paramphistomum cervi* in Madagascar.]—*Rev. Elev.* **11**, 427-438. [Summaries in English and Spanish.] 2858

The intermediate hosts were *Bulinus mariei* and *B. liralus*. Development of cercariae from miracidia took 35 days in the former and 50 days in the latter snail. *B. liralus* was widespread in Madagascar: the other snail was not found on the high plateau.—R.M.

FAHMY, M. A. M. & SELIM, M. K. (1959). Studies on some trematode parasites of dogs in Egypt with special reference to the role played by fish in their transmission.—*Z. Parasitenk.* **19**, 3-13. [In English. Abst. from authors' summary.] 2859

The fishes *Mugil cephalus* and *Telapia nilotica* act as second intermediate hosts for *Echinochasmus liliputanus*, *Prohemistomum vivax*, *Heterophyes heterophyes*, *H. dispar*, *Diorchitrema pseudocirratum*, *Haplorchis* spp., *Pygidioopsis genata* and *Stictodora sawakinensis*.

GIBSON, T. E. (1959). The identification of *Cysticercus bovis*, with special reference to



degenerate cysticerci. — *Ann. trop. Med. Parasit.* **53**, 25-26. [Author's summary modified.] **2860**

A survey of the cysts encountered in routine meat inspection, which macroscopically appeared to be *C. bovis*, revealed that only 25% were viable *C. bovis*. 4% were not *C. bovis*, and the remaining 71% were either caseous or calcified. Histological examination of 18 caseous and calcified cysts revealed cestode tissue in only 3. This proportion is too small to justify the use of histological methods as a routine measure. The difficulties these findings create for the meat inspector are discussed briefly.

VAN KEULEN, A. (1959). Cysticercose en vleeskeuring. I. [Cysticercosis and meat inspection. I.] — *Tijdschr. Diergeneesk.* **84**, 526-537. [In Dutch. Summaries in English, French and German.] **2861**

HOFSTRA, K. (1959). Cysticercose en vleeskeuring. II. [Cysticercosis and meat inspection. II.] — *Ibid.* 538-547. Discussion: pp. 548-549. [In Dutch. Summaries in English, French and German.] **2862**

I. The incidence of cysticercus (fertile cysts) in slaughter cattle has increased since 1950 (0.31%); in the years 1955-57 it was 0.55%, costing some 900,000 florins. In an epidemiological survey covering 458 farms, it was possible to trace the taenia carrier in 9%.

II. The gradual increase in incidence indicates that some infected carcasses escape detection at routine meat inspection. H. discussed the advantages and disadvantages of additional methods of examination used as safeguards in other countries, and the advisability of launching a publicity campaign concerning adequate cooking of meat.—F.E.W.

SHEPELEV, D. S. (1958). [Experimental infection of piglets with *Taenia hydatigena* eggs.] — *Uchen. Zap. Vitebsk. vet. Inst.* **16**, No. 1 pp. 52-55. [In Russian.] **2863**

Infection of 6 piglets aged 20-39 days each with from 3,000 to 20,000 eggs of *T. hydatigena* caused acute illness which commenced after 3 to 4 days and reached a peak within a week. There was emaciation, anaemia and fever. Two piglets died 7 and 14 days after infection. Smaller doses of eggs (1,400-2,600) caused a more chronic illness, with anaemia, eosinophilia and loss of body weight. Pathological changes were widespread in the acute illness, but were mainly confined to liver, lungs and serous membranes in the chronic form.—R.M.

TURNER, J. H. (1959). Experimental strongyloidiasis in sheep and goats. II. Multiple infections: development of acquired resistance.—*J. Parasit.* **45**, 76-86. [Author's summary modified.] **2864**

Immunity against *S. papillosus* was induced in parasite-free lambs by cutaneous application of 10,000, 20,000, or 30,000 larvae at 2-day intervals for 20 days. Also lambs and kids were initially infected by cutaneous exposure to 30,000 larvae, and then grazed on an infected pasture. No animal developed acute symptoms of strongyloidiasis. A strong resistance to further infection was demonstrated several weeks later by challenging one-half of the animals in pens and all on pasture with a single cutaneous exposure of 300,000 larvae, normally lethal for lambs and kids. The animals showed little effect of the challenge infection, but 2 of 3 parasite-free controls also exposed to 300,000 larvae died.

LARSH, J. E., JR., RACE, G. J. & GOULSON, H. T. (1959). A histopathologic study of mice immunized with irradiated larvae of *Trichinella spiralis*.—*J. infect. Dis.* **104**, 156-163. [Authors' summary modified.] **2865**

Mice given five stimulating infections with irradiated (7000 r) *T. spiralis* larvae exhibited, after challenge with untreated larvae, the same degree of immunity as control mice given the same number of previous infections with untreated larvae, but the titre of serum antibodies was much higher in the controls. Histopathological studies of the anterior small intestine revealed that the inflammatory response was identical to that reported previously in mice. In the mice stimulated with irradiated larvae it was less severe and developed more slowly than in controls.

It is clear that the pre-adult stage can stimulate immunity, which is associated with serum antibodies and a characteristic inflammatory response in the small intestine.

GIBSON, T. E. (1959). Controlled tests with various anthelmintics against *Nematodirus* spp. in sheep.—*Vet. Rec.* **71**, 431-433 & 434. [Author's summary modified.] **2866**

Of 8 compounds tested against *Nematodirus* spp. in sheep, only bephenium embonate was both effective and non-toxic.

ENIGK, K. & FEDERMANN, M. (1958). Die Therapie beim Lungenwurmbefall des Schafes. [Treatment of lungworm infestation in sheep.]—*Mh. VetMed.* **13**, 705-709. **2867**

The authors review the literature on the

anthelmintic treatment of lungworm infections and record their own experience in the treatment of sheep with a number of substances. Their assessment of anthelmintic efficiency depends on the reduction in faecal larval count, samples being examined on 2-4 occasions before and on 4-12 occasions after treatment.

Intratracheal injections of preparations containing iodine administered with the sheep in a sitting position reduced the output of *Dictyocaulus filaria* larvae by 50-80%.

Intramuscular inj. of emetine hydrochloride (0.003 ml. per kg. of a 1% solution) caused the total disappearance of protostrongyle larvae from the faeces of three sheep. Subcutaneous inj. was less effective.

Cyanacethydrazide (0.07 ml. of a 10% soln.) was given subcutaneously on 3 successive days to 67 sheep of which 54 were infected with *D. filaria*. Four days after the last dose *D. filaria* larvae had disappeared from the faeces of all except one sheep, but the authors suspect that had the faeces been examined on more than one occasion after treatment, larvae would have reappeared. The small lungworms were not affected.

83 sheep of which 66 were passing larvae of *D. filaria* received 150 mg. cyanacethydrazide per kg. orally on 3 consecutive days. *D. filaria* larvae disappeared from the faeces of 43 sheep but their numbers were unaffected in the other 23.

Among substances found ineffective were "Neguvon" and piperazine salts which were tried as aerosols, subcutaneously and orally. Stibophen and sodium iodide were ineffective when given intravenously. Subcutaneously administered carbon tetrachloride was ineffective and so was "Miracil D" [V.B. 21, 443] given orally.—J. F. MICHEL.

MACKENZIE, A. (1959). Studies on lungworm infection of pigs. III. — The progressive pathology of experimental infections.—*Vet. Rec.* 71, 209-214. 2868

Young pigs inoculated with single doses of either 2,000 or 4,000 *Metastrongylus elongatus* larvae were examined P.M. at intervals of from 1 to 80 days after infection. The clinical symptoms, development of the parasites, and the progressive lesions observed at various stages of the infection are described and correlated.

—J. H. ROSE.

KELLEY, G. W., JR. & OLSEN, L. S. (1959). The effect of hygromycin B on the migrating larvae of *Ascaris suum*.—*J. Amer. vet. med. Ass.* 134, 279-281. [Authors' summary modi-

fied.]

2869

Hygromycin B given to pigs at dosages ranging from 3,550 to 80,000 units daily, until 5-7 days after ascaris eggs were fed, retarded the growth of the larvae but did not prevent migration. Intramuscular doses of 3,550 units killed pigs in 5 days and retarded larval growth, but did not prevent migration. *Ascaris lumbricoides* exposed to hygromycin B for the first 5 days after infection later became established within the intestine.

SIEGMANN, O. & v. BÜLOW, V. (1959). Orientierende Versuche mit Hygromycin B zur Bekämpfung von Helminthen beim Geflügel. [Treatment of helminth parasites in poultry with hygromycin B.] — *Dtsch. tierärztl. Wschr.* 66, 173-178. [Summary in English.] 2870

"Hygromix", which contains 2,400,000 units of hygromycin B per lb., was fed to 70 hens as 0.453% of the rations for 3 weeks. Egg production declined very slightly during the period of administration and in the following 3 weeks, whereas that of control hens rose in the latter period. The difference was due to non-laying hens in the test group; whether the hygromycin B caused this is not known. In the subsequent 3-week period egg production of the test group rose to surpass that of one of the control groups. Egg hatchability was not affected. Fed as 0.5% of the ration for 4 weeks to 9 cockerels experimentally infected with *Ascaridia galli*, "Hygromix" inhibited development and egg production of the parasites and reduced their numbers, as judged by faecal and P.M. examinations. Fed as 0.45% of the ration for 2 months it controlled ascarids and heterakids in 154 naturally infected fowls, but not capillaria, cestodes (*Davainea proglottina*), or coccidia.—M.G.G.

DIVLJANOVIĆ, D. K. (1958). Osvrt na odnos stepena invazije sa *Thelazia rhodesi* u goveda prema patološko anatomskim promenama u oku. [Eye lesions in cattle associated with *Thelazia rhodesi* infestation in Yugoslavia.] —*Vet. Glasn.* 12, 1017-1018. [In Croat.] 2871

D. collected 3,444 *Thelazia rhodesi* from the eyes of 672 slaughter cattle in Yugoslavia. In some cattle conjunctivitis was mild, but in many it was purulent, with corneal lesions of varying severity.—E.G.

BUCKLEY, J. J. C. (1958). Occult filarial infections of animal origin as a cause of tropical pulmonary eosinophilia.—*East. Afr. med. J.* 35, 493-500. 2872

A human volunteer received s/c infective



larvae of *Wuchereria* sp. (?*malayi*) from *Macaca irus* and, 2 years later, infective larvae of *W. pahangi* from a Malayan domestic cat. Most of the signs and symptoms of tropical pulmonary eosinophilia appeared 14 and 10 weeks, respectively, after each inoculation, but no microfilariae were found in the blood and X-ray photographs of the chest were normal. The findings support the hypothesis of Danaraj (1956) that filariae, probably of animal origin, are a cause of tropical pulmonary eosinophilia. —M.G.G.

EDISON, J. F. B. & BUCKLEY, J. J. C. (1959). **Studies on filariasis in Malaya: on the migration and rate of growth of *Wuchereria malayi* in experimentally infected cats.**—*Ann. trop. Med. Parasit.* **53**, 113-119. [Authors' summary modified.] **2873**

Many cats died at various intervals after inoculation with infective larvae of *W. malayi*. All those that died were dissected, and developing or adult worms were recovered from 39 out of 54 (72%).

A total of 3,124 infective larvae were injected and 408 forms (13%) of *W. malayi* were recovered. The site of recovery was usually related to the site of inoculation, but some larvae migrated to the internal lymph vessels (in less than 16 hours).

Two moults occurred, at 9-10 days and at 35-40 days. Microfilariae were found in the peripheral blood as early as 75 days after inoculation of infective larvae.

The females continued to increase in size up to 288 days, while the males remained more or less the same after 64 days.

SINGH, S. N. (1958). **On a new species of *Stephanofilaria* causing dermatitis of buffaloes' ears in Hyderabad (Andhra Pradesh) India.**—*J. Helminth.* **32**, 239-250. **2874**

S. described *Stephanofilaria zaheeri*, a new species associated with ear-sore or "contagious otorrhoea" of buffaloes. It was distinguished from *S. assamensis*, the cause of hump sore, and from other species of the genus.—R.M.

See also absts. 2919 (ascarids); 2999 (report, Gt. Britain); 3000 (report, N. Ireland); 3001 (report, Cyprus); 3003 (report, N. Borneo); 3004 (report, Uganda).

#### SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

CARTER, P. D. (1958). **Cancer in sheep.**—*Vet. Insp. N.S.W.* p. 17. **2878**

In a flock of 1,600 Merino ewes about 6% developed cancerous growths on the ears while grazing bush feed following 6 months' drought. Hot summers in previous years had not pro-

duced similar outbreaks. No particular plant could be incriminated as a cause of photosensitization.—R. I. SOMMERVILLE.

MAN, P. H. (1959). **Determination of the anthelmintic action of anthiomaline and piperazine HCl following intravenous injections into dogs.**—*Cornell Vet.* **49**, 194-197. [Author's summary modified.] **2875**

Anthiomaline and piperazine hydrochloride, given intravenously to naturally infected dogs, had little anthelmintic action against the intestinal helminths and heartworms.

ISHIHARA, K., SUGANUMA, Y. & SAKAI, T. (1959). **[Effect of 1-bromo-naphthol-(2) on intestinal parasites of dogs.]**—*J. Jap. vet. med. Ass.* **12**, 8-12. [In Japanese. English summary modified.] **2876**

This drug had an excellent anthelmintic effect on canine hookworms when administered in 2 or 3 doses of 200 mg. per kg. body wt. between meals. Three doses are desirable for emaciated and heavily infested dogs. It removed 100% of ascarids when given in 3 doses of 200 mg./kg. between meals. The number of whipworm eggs was reduced by 2 doses of 200 mg./kg. between meals. Tapeworms were not removed by a dose of less than 1,500 mg./kg.

KARABAEV, D. K. (1958). **Le changement de l'helminthofaune des ovins au Kazakhstan central en correspondance avec la modification des conditions extérieures. [Changes in the incidence of helminths in sheep in Kazakhstan as a result of agricultural development of the area.]**—*Bull. Off. int. Epiz.* **49bis**, Nos. 11-12 pp. 223-233. [In English. pp. 234-243.] **2877**

There is a wide variety of helminths affecting sheep in Kazakhstan, 75 different species having been encountered. This is attributed to frequent movement of sheep and their contact with other animals (domestic and wild). The helminth fauna is continually changing with changing conditions of climate, environment and other factors. The more important helminths of sheep and methods of control are discussed.—T.E.G.R.

SAUNDERS, L. Z. & BARRON, C. N. (1958). **Primary pigmented intraocular tumours in**

animals.—*Cancer Res.* 18, 234-245. 2879

The authors discussed the occurrence of intraocular tumours in horse, ox, sheep, cat, dog, rabbit and hen, and described 15 such tumours from dogs. Three were adenomas, one was an adenocarcinoma of the iris and ciliary body, and 11 were malignant melanomas of the uveal tract.—R.M.

HERIN, V. (1958). Note sur le cancer de l'oeil des bovidés. [*Cancer of the eye in cattle in Ruanda-Urundi.*]—*Ann. Méd. vét.* 102, 463-471. 2880

Along with a brief useful review of the condition, a detailed description is given of 3 tumours seen in Astridia. It is noted that the condition is encountered in indigenous cattle of zebu type. The possible relationship of cases of "cancer eye" to avitaminosis A, or infestation by *Thelazia* or *Globidium*, is worth investigating.—E. COTCHIN.

See also absts. 3013 (book, diseases of swine); 3014 (book, isotopes).

## NUTRITIONAL AND METABOLIC DISORDERS

OYENUGA, V. A. (1958). Problems of livestock nutrition in Nigeria.—*Nutr. Abstr. Rev.* 28, 985-1000. 2883

This review deals mainly with work published in the last 10 years and gives a general picture of the problems involved. Domestic livestock are generally small, slow growing, late maturing, have a low rate of productivity and are poor food converters. This is not the result of excessive heat, but because nutritional levels are very low especially during the dry season. Improved feeding results in better growth and productivity. The chemical composition and digestibility of African foodstuffs are discussed and their composition and mineral contents are tabulated. Nigeria is not short of feeding stuffs as sources of energy and protein. The need for basic work on nutritional requirements for maintenance and production in the tropics is stressed.—ELIZABETH J. CASTLE.

MCDONALD, I. W. (1958). The utilization of ammonia-nitrogen by the sheep. — *Proc. Aust. Soc. Anim. Prod.* 2, 46-51. 2884

This review deals with the origin of rumen ammonia, its concentration and its toxicity, and the utilization of non-protein nitrogen in ruminant nutrition. The complex question of the biological value of fodder proteins is also discussed.—T. GRAINGER.

RICHMOND, H. G. (1959). Induction of sarcoma in the rat by iron-dextran complex.—*Brit. med. J.* April 11th, 947-949. [Author's summary modified.] 2881

In adult rats weekly i/m injection of iron-dextran complex induced sarcoma at the site of injection. Similar injections in weanling rats twice weekly for 12 weeks induced sarcoma at the site of injection some 7 months later.

GROUPÉ, V. & RAUSCHER, F. J. (1959). Factors contributing to production of "virus-free" tumors in turkeys by Rous sarcoma virus.—*Science* 129, 1022-1023. [Authors' summary modified.] 2882

Virus-neutralizing factors in tumour extracts and sera, age of the tumour, and the infecting dose of virus are important factors contributing to the infective titre of tumour tissue. Tumours produced with small amounts of virus may contain no demonstrable infective virus, and detectable inhibitory factors may or may not be present in tumour extracts or sera.

COLVIN, H. W., JR., BODA, J. M. & WEGNER, T. (1959). Studies on the experimental production and prevention of bloat in cattle. III. The effect of vegetable oil and animal fat on acute legume bloat.—*J. Dairy Sci.* 42, 333-345. [Authors' summary modified.] 2885

Rumen motility studies indicated that sufficient secondary (eructation) contractions occur during the development of bloat to relieve the pressure, if the cardia can be cleared of foam. Animal and vegetable fats prevent acute legume bloat by exerting such an effect.

JACKSON, H. D., SHAW, R. A., PRITCHARD, W. R. & HATCHER, B. W. (1959). Blood changes of cattle during bloat and effects of the alfalfa forage in vitro.—*J. Anim. Sci.* 18, 158-162. [Authors' summary modified.] 2886

Twelve cattle were grazed for 12 days on lucerne and 12 days on blue grass. Blood values were determined for red cell cholinesterase (ChE), plasma ascorbic acid, and total plasma cholesterol before a two-hour morning grazing period and after a two-hour afternoon grazing period. The animals were graded for bloat after grazing.

Lucerne increased the total plasma cholesterol values and this increase was highly correlated with the severity of bloat. The occurrence of bloat was highly correlated with the



*in vitro* inhibition of muscle respiration produced by a fraction of the forage. No significant change was noted for either ChE (*in vivo* and *in vitro*) or ascorbic acid during bloat.

TURNER, C. W. (1958). Estrogen content of colostrum and milk of dairy cattle.—*J. Dairy Sci.* **41**, 630-640. 2887

Oestrogenic activity of milk was assayed by feeding dried milk samples to ovariectomized mice and measuring increase in uterine weight. Diethylstilboestrol was used as standard. Even in late pregnancy the oestrogen content of milk was low. It was suggested that this may be due to low permeability of the epithelial cells of the udder.—N. S. SABA.

RINGARP, N. (1959). Ett med agalakti förloppande syndrom hos den nygrisade suggan (Agalactia toxæmica): Med särskild hänsyn till etiologi, patogenes och terapi. [Toxaemic agalactia in sows after farrowing: aetiology, pathogenesis and therapy.] — *Medlemsbl. Sverig. VetFörb.* **11**, 153-171. [In Swedish.] 2888

R. reports on 2,178 cases of agalactia in sows from 1951-58 in a district having 4,400 sows in 700 herds (about 7,000 farrowings a year). 1,180 of these cases occurred in the 4 years 1955-58. Cases were of five types: (a) toxæmic agalactia (1,045), (b) primary "hormonal" or symptom-free (71), (c) deficiency of or disturbance in neuro-hormonal milk ejection (39), (d) cases associated with distinct hypoplasia of the udder in young sows (18), (e) eclampsia (7). He outlined the clinical, histological and bacteriological features of the toxæmic type. He described his experiments.

I. It was possible to produce to a large extent all or some of the characteristic symptoms by (1) feeding 10-30 litres skim milk daily during the week before farrowing; (2) extensive changes in diet during that week; (3) feeding with poor quality fodder (damaged during harvesting or storage) for 10 days before farrowing; (4) oral administration of drugs (*e.g.* opium) to reduce peristalsis; (5) oral administration for a month before farrowing of methylthiouracil; (6) inducing a relative adrenocortical insufficiency by abrupt withdrawal, 3 days before farrowing, of adrenocorticosteroid therapy after prolonged massive dosage; but not by (7) introduction into the uterus, the day after farrowing, of culture of *E. coli* isolated from spontaneous cases of toxæmic agalactia; but only in animals either previously affected or from herds with a high incidence of the condition. In expts. 1-4, udder symptoms were dominant. In expt. 3, affected

animals sometimes had waxy muscle degeneration. In expt. 5, prolonged pregnancy and farrowing duration, waxy muscle degeneration and purulent discharge were characteristic. The udder was flaccid, the milk had an increased pH value and there was a focal-necrotizing mastitis. The disease picture closely resembled certain spontaneous cases. In expt. 6, two animals showed signs of gonitis. II. Experimental prophylactic treatment of all sows in herds having a high incidence with:—(1) 75-100 ml. of *E. coli* immune serum i/m 5 days before farrowing; (2) large oral doses of streptomycin during the last few days of pregnancy; (3) streptomycin plus a laxative during the last few days—gave the following results; Expt. 1: Highly significant decrease in incidence of toxæmic agalactia; significant decrease in total incidence (*i.e.*, toxæmic plus hormonal agalactia); no demonstrable difference in duration of farrowing. Expt. 2: Significant decrease in incidence of toxæmic agalactia; no demonstrable change in total incidence or in duration of farrowing. Expt. 3: Highly significant decrease in incidence of toxæmic agalactia and in total incidence, and in farrowing duration. In all three expts, the incidence of hormonal agalactia was higher in the treated than in control groups. III. The influence on blood sugar values of starvation for 3 days before farrowing was studied in 15 normal sows from unaffected herds and in 12 sows that had had toxæmic agalactia twice or three times. Before starvation no difference was demonstrable between the two groups: after starvation there was a highly significant fall in the test group.

IV. The 1-hour and 24-hour erythrocyte sedimentation rate (SR) of 92 sows in 8 herds with a high incidence of toxæmic agalactia was measured 2-3 days before farrowing. In 78 which remained healthy the mean SR was  $24.1 \pm 16.1$  and  $85.8 \pm 29.1$  respectively, as compared with  $59.5 \pm 27.1$  and  $115.9 \pm 18.3$  for the 14 which developed the disease.

R. considered that the syndrome arises as the result of intoxication primarily of gastrointestinal origin; this agrees with the experience that the disease is often preceded by constipation and that numerous cases occur in association with abrupt changes in the diet, feeding with low quality fodder or the use of dirty drinking water.

The results of treatment should be judged, not on the number of sows cured, but on the survival rate of the piglets up to 3 weeks of age. In the course of 2 years R. treated 128 cases with prednisolone. In many the symptoms were

grave. In five there was widespread cyanosis and the prognosis was very poor. All the sows survived and in four cases lactation was restored, though in two the piglets had to be fed glucose soln. plus a sow's milk substitute. Corticosteroid therapy was less successful in cases with high-grade waxy muscle degeneration. The drug was given by deep i/m injection, 80–100 mg. in severe and 50–60 mg. in milder cases. The effect on the general condition was striking; usually the sow began to eat after 8–12 hours and showed interest in her piglets. Unless the case is seen early (when laxative treatment plus corticosteroid therapy is suitable), antibiotic therapy should be introduced at the same time. In the 640 piglets born in the prednisolone-treated group mortality up to 3 weeks was 23%, as compared with 30.6% in 683 in a conventionally treated group, and 17.3% in 762 born in a control group (sows with normal lactation). Unfortunately the drug is still dear. The references, omitted from the text, are available in the reprint.—F.E.W.

CREEK, R. D., DENDY, M. Y. & HINNERS, S. W. (1959). **Furadroxyl as a growth stimulant in broiler diets.**—*Poult. Sci.* **38**, 145–148. [Authors' summary modified.] **2889**

"Furadroxyl" stimulated the growth of chicks, 10 g. per ton being adequate for maximum response. In the absence of other nitrofurans in the diet, chicks tolerated 200 g. of "Furadroxyl" per ton. The slight depression of growth observed with nitrofurazone as the sole chemotherapeutic additive appeared to be overcome by chlortetracycline or "Furadroxyl".

THOMPSON, A. & RAVEN, A. M. (1959). **The availability of iron in certain grass, clover and herb species. I. Perennial ryegrass, cocksfoot and timothy.**—*J. agric. Sci.* **52**, 177–186. [Authors' summary modified.] **2890**

The availability of iron in three species of grass has been investigated by measuring the increase in blood haemoglobin concentration, and the gain in total haemoglobin in nutritionally anaemic rats.

Inorganic iron (ferric chloride) was more available than the iron contained in the three grasses.

Iron in timothy grass was more available than that in ryegrass or cocksfoot.

RYDBERG, M. E., SELF, H. L., KOWALCZYK, T. & GRUMMER, R. H. (1959). **The effect of pre-partum intramuscular iron treatment of dams on litter hemoglobin levels.**—*J. Anim.*

*Sci.* **18**, 415–419. [Authors' summary modified.] **2891**

Piglets born to sows and gilts injected i/m 2 weeks before farrowing with an iron-dextran solution (10 ml.) maintained a higher haemoglobin level during the critical post-partum period than piglets born to untreated dams or to dams treated 4 weeks before farrowing. The Hb levels in the piglets in the last two groups did not differ significantly.

ULLREY, D. E., MILLER, E. R., WEST, D. R., SCHMIDT, D. A., SEERLEY, R. W., HOEFER, J. A. & LUECKE, R. W. (1959). **Oral and parenteral administration of iron in the prevention and treatment of baby pig anemia.**—*J. Anim. Sci.* **18**, 256–263. [Authors' summary modified.] **2892**

175 piglets were given either no iron, oral iron tablets, or intramuscular iron-dextran with or without intraperitoneal injection of certain vitamins. Haematological evidence established the superiority of intramuscular iron-dextran. No advantage was gained by i/p injection of vitamins.

DALE, D. G. & MACKAY, V. G. (1958). **Observations on the effect of injected iron dextran on weight gains and hemoglobin levels of baby pigs on an early weaning schedule.**—*Canad. J. comp. Med.* **22**, 371–375. [Summary in French.] **2893**

Trials using baby pigs for early weaning showed that a single injection of an iron solution maintained satisfactory haemoglobin levels while oral ferrous sulphate failed to do so. At weaning, an injection to controls and a second injection to previously treated pigs induced a marked haemoglobin response. Weight differences were not statistically significant.

—C. L'ECUYER.

CORRÊA, R. (1957). **Carência de cobalto em bovinos. I. Estudo clínico e demonstração experimental da existência da doença no Brasil. [Cobalt deficiency in cattle. I. Clinical and experimental study of the disease in Brazil.]**—*Arch. Inst. biol., S. Paulo* **24**, 199–227. [English abst. modified.] **2894**

In the State of São Paulo a syndrome is commonly found among cattle which consists of loss of appetite, lethargy, cachexia, anaemia and other signs of malnutrition. Popularly referred to as "peste de secar", "mal de colete", "sablose" etc., it is clinically identical with the enzootic marasmus in Australia and bush sickness in New Zealand. The incidence is higher



and the symptoms more severe in the rainy season from December to May.

In 222 normal animals the average values of liver cobalt and copper were, respectively, 0.201 and 198.24 p.p.m. of dry matter. In 20 sick animals the average values were 0.058 and 175.00 p.p.m. for cobalt and copper, respectively.

In forage from healthy pastures the average levels of cobalt and copper were 0.334 and 14.36 p.p.m. of dry matter, respectively, while in forage from affected areas the averages for the same elements were 0.046 and 14.23. In the soil of healthy regions there were 20.37 and 22.77 p.p.m. of cobalt and copper, respectively, and 0.797 and 18.25 p.p.m. in the soil of regions where the disease is prevalent.

Zebu cattle showed a greater dependency on cobalt: they presented all the symptoms of the disease when fed on forage containing 0.08 p.p.m. of cobalt, while other cattle only showed signs of disease when the level of cobalt dropped to or below 0.05 p.p.m.

In experiments over a period of three years, very good results have been obtained in the prophylaxis and treatment of the condition by feeding 1 to 2 mg. of cobalt daily to each animal in the regions where the disease prevails.

CUNNINGHAM, I. J. (1959). **Parenteral administration of copper to sheep.**—*N. Z. vet. J.* **7**, 15-17. [Author's summary modified.] **2895**

The cupric-bis-8-hydroxyquinoline 5:7 disulphonic acid salt of tetra diethylamine (commercially known as "Cuprimyl" or "Dicuprène") has been shown to cause no local reaction when injected s/c or i/m into sheep as an aqueous soln. or as a cerate. Most of the injected copper reaches the liver shortly after injection. High dose rates may cause copper poisoning, but a dose of 0.5 g. Dicuprène, providing 30 mg. Cu, was found safe for sheep.

Dicuprène has no advantage over copper glycinate as a source of copper for cattle.

Copper citrate was unsuitable for parenteral administration to sheep.

CUNNINGHAM, I. J. & HARTLEY, W. J. (1959). **Ryegrass staggers.**—*N. Z. vet. J.* **7**, 1-7. [Authors' summary modified.] **2896**

Ryegrass staggers is a condition of temporary tetanic muscle spasm that develops in grazing sheep, cattle, or horses, usually after a short period of brisk exercise. The pasture is usually dried-up perennial ryegrass with a small degree of slow growth, but the condition has occurred on green ryegrass and on short-rotation ryegrass.

No change in the blood constituents has been demonstrated and there are no lesions except for muscle dystrophy, which is apparently secondary. Supplements of vitamin E, minerals, and vitamin A did not cure or prevent the disease.

Remission occurs as soon as good growth of pasture takes place, or on a change to new green pasture, or to crops. There are no permanent effects and no deaths except from starvation or through accident during spasm.

The symptoms recurred in a recovered sheep that was fed dried grass cut from a paddock where the disease was occurring. It is suggested that the cause is a toxin in the grass.

HICKEY, F. (1959). **Magnesium in animal nutrition and the causes and prevention of grass staggers.**—*N. Z. Agriculturist* **11**, No. 3. pp. 3-5. [Author's summary modified.] **2897**

The factors which combine to induce the unique tetanic syndrome loosely termed "grass staggers" are not yet fully understood. While some maintain that it arises from a simple dietary deficiency of magnesium, most consider that it is due to an acute metabolic disturbance rather than to a true mineral imbalance or deficiency.

Whatever the cause, the syndrome is precipitated in adult animals by inability to mobilize the store of magnesium located in bone to tide over the period during which the dietary source is inadequate. The animal is forced to draw upon the small amounts of Mg in the serum and other fluids and the progressive development of hypomagnesaemia results.

Considerable evidence indicates that the mineral content of herbage influences the occurrence of hypomagnesaemia and that enhancing the intake of magnesium by the grazing animal will alleviate and in a high proportion of cases will prevent the condition.

The regular top-dressing of pastures with fertilizers containing magnesium would seem to be a wise precaution where grass staggers in cows or sheep is a frequent hazard.

TODD, J. R. & RANKIN, J. E. F. (1959). **Experiments on the cause of hypomagnesaemic tetany in calves.**—*Vet. Rec.* **71**, 256-260. [Authors' summary modified.] **2898**

Hypomagnesaemia did not apparently affect blood cholinesterase. Calves with hypomagnesaemia were not markedly more susceptible to the effects of an anti-cholinesterase drug (physostigmine salicylate) than normal calves.

KEMP, A. (1959). Landbouwkundige aspecten van het kopziektevraagstuk. [*Agricultural aspects of hypomagnesaemic tetany.*] — *Tijdschr. Diergeneesk.* **84**, 469-484. [In Dutch. Summaries in English, French and German. English summary modified.] **2899**

A statistical investigation showed a significant relation between fertilization, affecting the composition of the herbage, and the incidence of grass tetany.

This has been confirmed by grazing experiments in which heavy dressings with potassium and nitrogen resulted in a lowering of the serum magnesium levels. Six of 8 cows grazing treated pastures developed grass tetany. The relation between the magnesium content of herbage and serum was discussed and preventive measures were proposed.

SMITH, R. H. (1959). Calcium and magnesium metabolism in calves. 4. Bone composition in magnesium deficiency and the control of plasma magnesium.—*Biochem. J.* **71**, 609-614. [Author's summary modified.] **2900**

Individual caudal vertebrae were a satisfactory guide to the composition of the skeleton in calves with magnesium deficiency. Depletion of Mg was uniform in the different caudal vertebrae although it varied in other parts of the skeleton. Periodic removal and examination of these vertebrae from calves fed cow's milk or synthetic milk with a low Mg content revealed that the percentage of Mg in the bone ash fell progressively from a normal figure of about 0.75% to about one-third of this value, when serious clinical symptoms of Mg deficiency developed. Injection of Mg restored normal values. The concentrations of Mg in bone ash and plasma were related. Bone appears to play little or no part in the control of plasma Mg during excess of Mg, but in calves with Mg deficiency the concentration of Mg in the plasma is determined by that in the bone. No significant changes in total bone ash or in the proportion of calcium in the ash were observed concomitant with the depletion of bone magnesium.

V. D. HORST, C. J. G. & HENDRIKS, H. J. (1958). Balance trials with milking cows. I. Communication. Results obtained by feeding "potassiumrich" grass. — *Tijdschr. Diergeneesk.* **83**, 1162-1174. [In English. Summaries in Dutch, French and German.] **2901**

Four cows, two stall fed and two kept in a bare field, were fed cut grass either normal or rich in potassium. The 'potassium-rich' grass contained about twice the amount of potassium,

a quarter the sodium and half the calcium and magnesium of the normal grass. Serum calcium and magnesium levels remained practically unchanged whichever grass was fed, except that in three instances there was a small decrease in the magnesium level when the cows were first fed the potassium-rich grass.

Balance trials on the stall fed cows showed that when the potassium-rich grass was fed the cows utilized less potassium, calcium and magnesium and more sodium than when the normal grass was fed.—ELIZABETH J. CASTLE.

GRANT-FROST, D. R. & UNDERWOOD, E. J. (1958). Zinc toxicity in the rat and its interrelation with copper. — *Aust. J. exp. Biol. med. Sci.* **36**, 339-345. **2902**

Rats were fed: (a) a basal diet; (b) basal diet plus 0.4 mg. Cu daily; (c) basal plus 0.5% Zn.; (d) basal diet with the Cu and Zn; (e) basal diet restricted to food intake of group (c).

Zinc lowered food consumption, growth, haemoglobin levels, copper retention and body fat content. Loss of appetite and slower growth were the earliest signs of Zn intoxication.

Copper did not increase food intake of the Zn-fed rats but improved growth slightly, maintained normal blood and tissue copper levels and greatly protected against anaemia.

It is concluded that depression of growth results largely but not entirely from reduced consumption of food; that anaemia is caused by Zn-induced Cu deficiency; and that Zn not only reduces blood and tissue Cu but probably antagonizes Cu at a cellular level.

—C. H. GALLAGHER.

PETRICHEV, M., LAZAROV, V. & SOTIROV, N. (1958). [Content of calcium, phosphorus and creatinine in the blood serum and urine of buffaloes with nephrolithiasis.]—*Izv. Inst. Pat. Zhiivotni, Sofia* **7**, 149-161. [In Bulgarian. Summaries in English and Russian.] **2903**

Carbonate calculi were found in the kidneys of 95% of buffaloes examined (139 male and 26 female) in Bulgaria. The blood contained averages of 10.36 mg.% calcium, 6.25 inorganic phosphorus and 1.96 creatinine. Calcium content of urine ranged from 0 to 44 mg.% but in most cases was 1-5 mg.%. There was an average conc. of 171 mg.% of creatinine in the urine. None of these values was affected by age or sex. The relationship of blood composition to nephrolithiasis was discussed.—R.M.

WHITING, F. & BEZEAU, L. M. (1958). The calcium, phosphorus, and zinc balance in pigs as influenced by the weight of pig and



the level of calcium, zinc, and vitamin D in the ration.—*Canad. J. Anim. Sci.* **38**, 109-117. **2904**

Digestion and metabolism experiments were carried out with pigs of various body weights on the effects of supplements of calcium, zinc, and vitamin D on absorption and retention of calcium, phosphorus, and zinc. Body weight gains and appetite were not affected by the addition of calcium, zinc, or vitamin D to the rations. Parakeratosis appeared when pigs were fed the basal or the basal-plus-calcium rations, but not when the rations were supplemented with zinc even though most of the zinc was excreted in the faeces. The authors discuss the interrelations between these factors and conclude that a high vitamin D content of the ration and weight of pig may be of importance in the development of parakeratosis.

—C. L'ECUYER.

WILSON, R. H. & DEEDS, F. (1959). Toxicity studies on the antioxidant 6-ethoxy-1,2-dihydro-2,2,4-trimethyl-quinoline.—*J. agric. Food Chem.* **7**, 203-206. **2905**

The LD<sub>50</sub> for rats of this antioxidant, which protects carotene, was 178 mg./kg. body wt. In studies of the chronic toxicity, 0.2% in the diet depressed the growth of rats for the first 2-4 weeks, after which growth was nearly as rapid as in controls. Haemoglobin values were not affected. P.M. examination revealed damage to the kidneys, liver and thyroid gland in many male rats, but in none of the females. The liver and kidneys of both sexes were heavier than in controls. A few tumours were found. Daily application to the skin of rabbits and g.pigs for 2 weeks failed to induce skin sensitization.—M.G.G.

WILSON, R. H., THOMAS, J. O., THOMPSON, C. R., LAURER, H. F. & KOHLER, G. O. (1959). Absorption, metabolism, and excretion of the anti-oxidant, 6-ethoxy-1,2-dihydro-2,2,4-trimethyl-quinoline.—*J. agric. Food Chem.* **7**, 206-209. [Authors' summary modified.] **2906**

The metabolism and excretion of tagged ethoxydihydrotrimethylquinoline (EMQ-C<sup>14</sup>, Santoquin-C<sup>14</sup>) was studied in rats and a cow. EMQ was rapidly and nearly completely excreted in the urine and faeces. There was a little breakdown to carbon dioxide, indicating stability of the ring system. The distribution in the tissues suggested that the molecule was rendered more soluble in water. Traces of radioactivity remained in the tissues for as long as 4 weeks. Continued ingestion by

rats of a diet containing 0.005% EMQ for 10 days caused tissue concentrations, as EMQ, ranging from 0.04 to 0.3 p.p.m. in muscle to 2.1 to 4.8 p.p.m. in kidney and liver. Milk from rats fed the 0.005 EMQ diet for 10 days contained 0.12 to 0.19 p.p.m. as EMQ. A single dose of 155 mg. of EMQ in a cow produced a max. milk conc. of EMQ of 0.036 p.p.m. A small degree of placental transfer was found in rats.

KUTTLE, K. L. & MARBLE, D. W. (1959). The use of antioxidants and vitamin E in preventing white muscle disease of lambs.—*Cornell Vet.* **49**, 183-191. [Authors' summary modified.] **2907**

In field trials vitamin E (200 i.u.) was fed daily to 25 lambs, 2-3 weeks old; no increases in serum glutamic oxalacetic transaminase or other evidence of white muscle disease occurred. 11 of 24 untreated controls showed marked increases in the enzyme; 3 controls subsequently developed the disease.

Butylated hydroxytoluene, alone or mixed with butylated hydroxyanisole, when fed at 200 mg. daily, failed to prevent the disease in lambs fed a cod-liver oil and skim milk ration, but santoquin (200 mg. daily) and vitamin E (200 i.u. daily) did prevent it.

CSONTOS, J. & PROHÁSZKA, L. (1958). Adatok a szopósbarányok izomelfajulásának oktanához és a betegség gyógyításához. [Aetiology and treatment of muscular dystrophy in lambs.] — *Mag. állator. Lapja* **13**, 350-351. [In Hungarian. Summaries in English and Russian.] **2908**

Zenker's hyaline degeneration of muscles causing paralysis and, frequently, death in lambs, 2-10 weeks old, was observed in some highland flocks in Hungary. Estimations of vitamin E content of the liver, muscles, ewe's milk; vitamin A content of the liver; and glutathione content of the liver and muscles, were carried out. In flock A, where the condition caused a death rate of 20-25% only traces, or no vitamin E and glutathione were found. In flock B, where the condition caused no death, only the ewe's milk was found to contain abnormally low amounts of vitamin E, the other values being normal. The vitamin A level in the liver was in all cases normal. In flock C (similarly affected to flock A), after the inclusion of 50-100 g. wheat germ in the daily ration of pregnant and milking ewes during the winter months no cases occurred in the next lambing season. Doses of 90 mg. tocopherol acetate seemed to hasten the recovery of mild cases

compared with untreated controls, but did not prevent death in severe cases. The authors consider that factors other than vitamin E deficiency are involved and that further work is needed.—A. SEBESTENY.

PROHÁSZKA, L. (1958). Izom-dystrophiák E-avitaminosis következtében. [**Muscular dystrophy caused by vitamin E deficiency.**] — *Mag. állator. Lapja* 13, 366-367. [In Hungarian.] 2909

A discussion of the literature. No new work.  
—A. SEBESTENY.

CSONTOS, L. & SZABÓ, I. (1958). A bárányok szív- és vázizomelfajulása. [**Dystrophy of the heart and skeletal muscles in lambs.**] — *Mag. állator. Lapja* 13, 345-349. [In Hungarian. Summaries in English and Russian.] 2910

An increasing incidence of dystrophy of the heart and skeletal muscles among lambs (aged 8 days to 6 weeks) in good condition was observed in parts of Hungary. The lesions, symptoms and history of the disease are described. Preventive and curative treatment of lambs in two flocks with repeated i/m injections of 20-60 mg. alpha tocopherol acetate gave a slight, but non-significant, decrease in the incidence and severity of the disease. From the character of the disease the authors consider that vitamin and mineral deficiency is involved. Preventive measures suggested are use of high doses of vitamin E, and management aimed at early spring lambing.—A. SEBESTENY.

WEST, W. T. & MASON, K. E. (1958). **Histopathology of muscular dystrophy in the vitamin E-deficient hamster.** — *Amer. J. Anat.* 102, 323-349. 2911

41 hamsters were weaned on to a vitamin E deficient diet and groups killed at intervals 20 to 100 days afterwards. 56 more weaned hamsters were fed the deficient diet for 100 days and then supplemented with  $\alpha$ -tocopherol acetate. They were killed at intervals 1 to 30 days after the commencement of therapy. In all cases samples for histological examination were taken from five skeletal muscles and a spread preparation made from the entire cheek muscle.

The main lesions in the muscles of deficient hamsters were coagulation necrosis of fibre segments, disorientation and 'rowing' of muscle nuclei, formation of contraction clots and the regeneration of new muscle fibres from the remnants of disintegrating ones. Response to vitamin E therapy was rapid, degenerative changes ceased in 5-10 days and only normal regenerat-

ing and 'rowed' fibres remained. Restoration of muscle tissue appeared to be complete. 51 excellent photographs are included.

—ELIZABETH J. CASTLE.

ZWART, D. (1959). Struma bij de geit op Nederlands Nieuw-Guinea. [**Goitre in goats in Dutch New Guinea.**] — *Tijdschr. Diergeneesk.* 84, 550-559. [In Dutch. Summaries in English, French and German.] 2912

Since the introduction of goats in a coastal area of Dutch New Guinea goitre has become a problem, although adult sheep in the area are only very slightly affected. In a flock of 14 goats that had lived in the district for 3 years, only 4 healthy kids were born, 11 being stillborn and one very weak with greatly enlarged thyroids; the stillborn kids were hairless. The iodine content of the drinking water was very low; that of the milk fairly low. The condition responds to administration of potassium iodide in the drinking water.—F.E.W.

EWY, Z. & BOBEK, S. (1959). Poziom jodu związanego z białkiem w surowicy bydła rasy czerwonej polskiej z okręgów wolowórczych Podhala. [**Serum protein bound iodine levels in cattle in an endemic goitre area in Poland.**] — *Med. Wet., Warszawa* 15, 100-105. [In Polish. Summaries in English and Russian.] 2913

Protein bound iodine was estimated in serum samples from 82 Polish Red cattle of various ages in mountainous areas where human goitre is endemic. In only 4 out of 64 adults was the level below 1.5  $\mu\text{g.}\%$ , indicating hypothyroidism. The mean value in calves up to a year old was 5.68  $\mu\text{g.}\%$ , and in cows 3.0  $\mu\text{g.}\%$ . In older cows and bulls it was slightly higher.

—M. GITTER.

DELL, J. C. & POULTON, B. R. (1958). **Effects of high levels of vitamin D<sub>2</sub> fed prepartum on the incidence of parturient paresis in dairy cattle.**—*J. Dairy Sci.* 41, 1706-1714. 2914

The effect of the daily feeding of 30 million U.S.P. units of vitamin D<sub>2</sub> pre-partum was studied in over 500 parturitions in 32 herds of Jersey cows. Treatment commenced 3 days before the expected date of calving and continued until 2 days after with a maximum of 7 days. The incidence of milk fever in cows with a previous history of the disease was 23.1% in treated animals and 61.3% in untreated controls. In herds with no previous history, milk fever occurred in 6.4% of treated animals and in 22.6% of controls. Pre-partum levels of vitamin D<sub>2</sub> affording the greatest protection were



between 60 and 150 million U.S.P. units and an unusually high incidence of the disease occurred in animals completing the treatment one or more days before parturition. This is possibly due to a suppression of parathyroid activity.

Changes in serum calcium and phosphorus after treatment with vitamin D<sub>2</sub> were studied in a herd of cattle of breeds other than Jersey, all having a previous history of hypocalcaemia. Results were too variable for any conclusions to be drawn.—ELIZABETH J. CASTLE.

BLACKBURN, P. S., CASTLE, M. E. & STRACHAN, N. H. (1958). **The effect of feeding two levels of concentrates on the incidence of ketosis in dairy cows.**—*Brit. vet. J.* **114**, 323-332. **2915**

Two groups of six cows were fed either 252 lb. or 126 lb. per cow of concentrates in the six weeks before calving. All were given 28 lb. of grass silage and 8-12 lb. of dried grass daily, before and after calving. In all except two of the cows the blood ketone level rose immediately after calving. The animals were placed in arbitrary classes according to blood ketone levels and there was one severe clinical, three clinical and one sub-clinical case in each group. Blood ketones returned to normal 15-21 days after the cows were turned out to grass and in the two cows turned out three days after calving they did not rise above the pre-partum levels.

An average of 15% of milk yield was lost during the early part of lactation in cows with ketosis.—ELIZABETH J. CASTLE.

GOOD, F. D. (1958). **Bovine ketosis (acetonæmia).**—*Vet. Rec.* **70**, 1000-1001. **2916**

G. treated established cases of acetonæmia with potassium chlorate given orally. The dose for an average cow was 1 oz. in 1 pint of cold water twice daily for 3 days. This cost only 1s. 6d. and was said to be 100% successful.

—ELIZABETH J. CASTLE.

MAYES, P. A. (1959). **Ketosis in the rat on a fat diet.**—*Biochem. J.* **71**, 459-466. [Author's summary modified.] **2917**

The course of ketosis was investigated in rats fasted for 24 hours and then fed different quantities of butter-fat. Ketonaemia persisted with all intakes which were deficient in calories but was reduced, and sometimes abolished, when the calorie requirement was met by the fat. The amount of liver fat and glycogen increased in proportion to the quantity of fat eaten. A correlation existed between the amount of fat in the liver and in the abdominal depot. Appreciable quantities of liver glycogen were found during ketosis; a critical amount in itself is thought not to initiate the reduction in ketosis. It is suggested that a non-glycogenolytic ketogenic, fat-mobilizing hormone (or hormones) is secreted as a response to calorie deficiency in the tissues. The use of ketonuria to estimate ketosis is criticized.

See also absts. 2999 (report, Gt. Britain); 3002 (report, Mauritius); 3012 (book, trace elements); 3013 (book, diseases of swine).

## DISEASES, GENERAL

GALOUZO, I. G. (1958). Les foyers naturels des maladies des animaux au Kazakhstan et dans les Républiques de l'Asie centrale soviétique. [**Foci of diseases of livestock in Kazakhstan and the central Asian republics.**]—*Bull. Off. int. Epiz.* **49 bis**, Nos. 11-12 pp. 114-127. [In English, pp. 128-141.] **2918**

A general account of natural foci of infectious and contagious diseases of animals in Kazakhstan and the central Asian republics and the part played by wild animals and arthropod parasites as reservoirs and transmitters of these diseases.—T.E.G.R.

WEIDE, K. D. & TWIEHAUS, M. J. (1959). **Hematological studies of normal, ascarid-infected, and hog cholera-vaccinated swine.**—*Amer. J. vet. Res.* **20**, 562-567. [Authors' summary modified.] **2919**

The haematology of 12 normal young pigs was reported and compared with previously published results.

Pigs experimentally infected with ascarid ova developed a mild anaemia 32 days after infection. Circulating eosinophiles increased 4 days after infection, reached a peak by the 16th day, and returned to normal within 28 days.

Pigs inoculated with lapinized swine fever virus developed a mild leucopenia. That following inoculation lasted for about 8 days, whereas that following challenge lasted for at least 16 days. Leucocytosis developed following the leucopenia of immunization. The leucopenia following immunization lasted longer in ascarid-infested animals, and the count was slower in returning to normal than in non-infested pigs. Pathological findings will be reported in another paper.

ARCHER, R. K. & MILLER, W. C. (1959). **The interpretation of haematological examinations in Thoroughbred horses.**—*Vet. Rec.* **71**, 273-277. [Authors' summary.] **2920**

The interpretation of laboratory haematological examinations of equine blood is described and discussed. A preferred method for the collection of specimens is detailed. Some of the more common haematological deviations from normal are described together with their possible pathological causes.

NUMANS, S. R. & TOUSSAINT RAVEN, E. (1958). Liggingsveranderingen van de lebmaag bij het rund. [**Displacement of the abomasum in cattle.**]—*Tijdschr. Diergeneesk.* **83**, 1199-1216. [In Dutch. Summaries in English, French and German.] **2921**

Case reports of torsion of the abomasum in 7 cattle, displacement of the abomasum in 4 cattle, and one case of combined torsion and displacement. The conditions were diagnosed by laparotomy. Surgical treatment was rarely successful because the conditions often recurred.

—R.M.

SMOLLIICH, A. (1958). Statistischer Beitrag zur Kapselmelanose der Nebennieren des Rindes. [**Melanosis of the adrenal capsule in cattle.**]—*Mh. VetMed.* **13**, 658-660. **2922**

Examination of 300 slaughter cattle and 12 bovine foetuses revealed 44 cases (14%) of melanosis of the adrenal capsule.—E.V.L.

HANSEN, H.-J. & MOSTAFA, S. E. (1958). Ostéochondrose cervicothoracique chez le chameau. Étude comparée des lésions des disques intervertébraux. [**Osteochondrosis of the cervical and thoracic vertebrae in camels.**]—*Rev. Elev.* **11**, 439-446. [Summaries in English and Spanish.] **2923**

Morphological, radiological and histological examinations of the vertebral column of 509 slaughtered Egyptian camels revealed lesions in 40; they were commonest in the last cervical and first two lumbar vertebrae. The lesions appeared to commence with degeneration of the intervertebral disk and epiphyseal cartilages. Subsequent osteosclerosis and formation of osteophytes sometimes led to ankylosis; in other cases there was abscess formation due to secondary bacterial infection (*Corynebact. equi* in two cases and *C. pyogenes* in one). The condition was similar to the osteochondrosis in cattle previously described by Hansen [*V.B.* **28**, 235] and was believed to be caused by mechanical stresses. It was distinguished from

disk degeneration with disk prolapse occurring in man, dog and cat, and from deforming spondylosis in man and dogs.—R.M.

DE VRIES, J. (1959). Dampigheid, een longaandoening bij schapen. [**Chronic progressive pneumonia in sheep.**]—*Tijdschr. Diergeneesk.* **84**, 442-449. [In Dutch. Summaries in English, French and German. English summary modified.] **2924**

A description is given of a slow progressive pneumonia in sheep grazing on the sea-dikes of the province of Groningen, resembling the pneumonias described by Koens [*Thesis, Utrecht* (1943)] on the island of Texel in Holland, by Lucam (1942) in France and by Sigurdsson (1954) in Iceland.

Periodical faecal larval counts during two years showed that lungworms had no influence on the development of the disease.

In a transmission experiment in the field during three years the disease has not been transmitted from diseased to healthy animals.

The author suggested that the pneumonia was caused by an irritant in the air.

ROBERTSON, J. M. & WILSON, A. L. (1958). **Focal symmetrical encephalomalacia in lambs.**—*Vet. Rec.* **70**, 1201-1202. **2925**

Outbreaks of disease affecting 4 lambs and 4 hogs over 6 months old were described. One lamb and one hogg died suddenly, possibly from pulpy kidney disease. The remaining animals developed nervous symptoms of apathy, wandering and apparent blindness and deafness; all were dead within 14 days. P.M. features of the brains were widespread necrosis, profuse extravasation of erythrocytes, prominent blood vessels, eosinophilic bodies and invasion by compound granular corpuscles. Biological tests were not made on the lambs though *Cl. welchii* Type D toxins were obtained from one hogg. Biological tests on 2 hogs that died from encephalomalacia were negative, as were culture examinations of the brain.—E.V.L.

LITTLEWORT, M. C. G. (1958). **Tumour-like exostosis on the bones of the head in puppies.**—*Vet. Rec.* **70**, 977-978. **2926**

Lesions of a cranio-mandibular osteopathic type are described in 5 unrelated West Highland Terriers, 5-6 months old, of which one was a female. Pain on mastication was noted before enlargement of the petrous temporal and the occipital and mandibular bones became evident, leading to more severe symptoms. Tumours



consisted of cartilage and cancellous bone, mostly about 4 cm. in diameter. Theories of the pathogenesis are presented.—IRENE M. DIXON.

OLSSON, S-E. (1958). **The dynamic factor in spinal cord compression. A study on dogs with special reference to cervical disc protrusions.**—*J. Neurosurg.* **15**, 308-321. **2927**

From a study of cervical disk protrusion in 40 dogs, the author found that dynamic and inflammatory factors were important for the maintenance of symptoms: a static compression, even of quite remarkable extent, was tolerated relatively well in most cases. Surgical treatment by fenestration of the disk appeared to eliminate the dynamic factor. [See also *V.B.* **21**, 3687.]—R.M.

SKALKA, M. (1958). **Anaemia and liver damage in X-irradiated animals.**—*Nature, Lond.* **182**, 1602-1603. **2928**

Experiments on rats and mice subjected to whole-body irradiation revealed a significant relationship between the decrease in r.b.c. count and increased total liver fats. It could be assumed that the organism was capable of compensating the deficiency of r.b.c. until the critical figure of 2-2.5 million/cu. mm. in rats and 4-4.5 million/cu. mm. in mice was reached, but that in severer anaemia the compensating mechanisms were insufficient.—E.V.L.

PIHL, A. & ELDJARN, L. (1958). **Pharmacological aspects of ionizing radiation and of chemical protection in mammals.**—*Pharmacol. Rev.* **10**, 437-474. **2929**

A comprehensive review of the literature with 244 references.—R.M.

MORGAN, A. & WILKINS, J. E. (1959). **The distribution of 'fall-out' radio-strontium in a sheep skeleton.**—*Biochem. J.* **71**, 419-422. [Authors' summary modified.] **2930**

A method is described for the determination of  $^{89}\text{Sr}$  and  $^{90}\text{Sr}$  in bone by radiochemical analysis. Serial sections from a tibia of a yearling sheep were analysed for  $^{89}\text{Sr}$ ,  $^{90}\text{Sr}$  and stable strontium. The concentration of  $^{90}\text{Sr}$  was determined in various bones and the maximum variation from the skeletal average was only about 10%.

STOVER, B. J., ATHERTON, D. R. & KELLER, N. (1959). **Metabolism of  $\text{Pu}^{239}$  in adult beagle dogs.**—*Radiation Res.* **10**, 130-147. [Authors' summary modified.] **2931**

The metabolism of plutonium in young adult beagle dogs was studied for 4 years after a single i/v injection. Most was deposited in

the skeleton and the liver, and measurements in the tissues agreed well with the retention calculated from excretion. Plutonium metabolism in the dog is more like that in man than in rats. That deposited in the liver persists for a long time in man and dog, but not in rats. The retention in man is a little higher than in dogs, but the distribution is similar. Although the dose rates and cumulative doses to the skeleton equalled those to the liver, skeletal damage predominated. A limited comparison of skeletal effects of  $\text{Pu}^{239}$  and  $\text{Ra}^{226}$  based on the amount of energy dissipated in the bone showed that plutonium is more toxic.

MOORE, R. D., SORENSON, G. D. & SCHOENBERG, M. D. (1959). **Progressive cellular alterations of lymph nodes.**—*Arch. Path.* **67**, 274-280. [Authors' summary modified.] **2932**

There is a fairly characteristic histological pattern of lymph nodes associated with a variety of diseases. The cytological and cytochemical modifications of the plasma cells in these nodes are described. When the disease state is prolonged there is an increase in periodic acid-Schiff-positive material in the cytoplasm of these cells, a portion of which is a substrate for  $\beta$ -glucuronidase.

AWAD, Y. L. (1959). **De icterische index van koeien, buffels en kamelen in Egypte. [The icteric index of cows, buffaloes and camels in Egypt.]**—*Vlaams diergeneesk. Tijdschr.* **28**, 140-148. [In Flemish. Summaries in English and French. English summary modified.] **2933**

The icteric index of 160 buffaloes, 191 cattle and 97 camels was recorded.

Icteric index in buffaloes is affected by physiological factors. Very young animals have higher values than adults and pregnant than non-pregnant. At lactation the level drops.

The higher level of carotene in the diet of cattle in winter and spring interferes with the results, enhancing the values. Metabolism of carotene in buffaloes and cattle is different, cattle being less able to convert carotene into vitamin A in the intestine.

Camels have a very low icteric index which appears to be constant and rarely changes with sex, maturity or pregnancy.

HOWELL, J. S. (1959). **Histochemical demonstration of copper in copper-fed rats and in hepatolenticular degeneration.**—*J. Path. Bact.* **77**, 473-484. [Author's summary modified.] **2934**

Four histochemical reactions for the demonstration of copper are described and the distribution of Cu in copper-fed rats has been determined. Storage of Cu is mainly within the parenchymal cells of the liver, little appearing in the reticulo-endothelial cells.

In four human beings with hepatolenticular degeneration Cu has been demonstrated in the parenchymal cells of the liver and in the Kayser-Fleischer ring of the eye. None was demonstrable in the brain.

Histochemical demonstration of Cu in liver biopsy specimens might aid the diagnosis of hepatolenticular degeneration.

See also *absts.* 3001 (report, Cyprus); 3006 (report, U.S.A.); 3013 (book, diseases of swine); 3015 (book, medicine).

## POISONS AND POISONING

WAHLSTROM, R. C. & OLSON, O. E. (1959). **The effect of selenium on reproduction in swine.**—*J. Anim. Sci.* **18**, 141-145. [Authors' summary modified.] **2936**

Thirty gilts were used to study the effect of selenium on reproduction and the value of arsanilic acid as a selenium poisoning preventive. Ten p.p.m. of selenite selenium lowered the conception rate and increased the number of services required per conception. When sows were fed this ration the percentage of stillbirth was higher and the piglets were smaller and weaker at birth. Fewer were weaned and the 56-day weights were significantly reduced.

Arsanilic acid in the selenium ration improved the percentage of live piglets born but did not improve the birth weights or average number weaned per litter. The greatest advantage of arsanilic acid appeared to be in increasing the weight of pigs at 56 days.

MEDWAY, W. & KARE, M. R. (1959). **The mechanism of toxicity associated with an excessive intake of sodium chloride.**—*Cornell Vet.* **49**, 241-251. [Authors' summary modified.] **2937**

Pigs and cockerels were killed by drenching them with sodium chloride solution. A critical factor was the simultaneous deprivation of water. Evidence suggested that the cause of death was dehydration of vital tissues, the mechanism possibly being by breakdown of the blood-brain barrier.

Quantitatively the most pronounced chemical change was the increased sodium content of the brain. Eosinophilic cuffing was observed in the brain of the pigs but not of the cockerels.

The greater sensitivity to salt of young animals is probably due to their relatively limited water reserves.

ADAMS, C. W. M. (1959). **A histochemical method for the simultaneous demonstration of normal and degenerating myelin.**—*J. Path. Bact.* **77**, 648-650. [Author's conclusions.] **2935**

The osmium tetroxide- $\alpha$ -naphthylamine (OTAN) method has distinct advantages over other techniques of the Marchi or Weigert-Pal type for staining degenerating and normal myelin.

The method is simple and requires no special preliminary fixative.

Both normal and degenerating myelin are demonstrated simultaneously.

This work would question the commonly held opinion that salt is inherently toxic to domestic animals. However it is felt that much of the so-called "salt poisoning" is really due to poor management in failure to provide continuous clean water supplies.

JAMIESON, N. D. (1958). **Adverse effect of nitrate metabolic products on sheep growth.**—*Nature, Lond.* **181**, 1601-1602. **2938**

The metabolism of nitrate in the rumen of sheep on pasture can change the structure of the rumen volatile fatty acids, lowering the percentage of acetic acid with a corresponding increase in propionic and butyric acids. Rumen samples of similar volatile acid composition have been recorded in sheep on pasture of variable nitrate content and animals with low percentages of acetic acid made poor growth. The nitrate metabolic products, nitrite, hydroxylamine and ammonia were examined by the author for their effect on the volatile fatty acids of the rumen and on sheep growth; haemolytic anaemia was produced by dosing hydroxylamine and also when nitrite was suddenly withdrawn after having been administered for a period of 19-23 days. The fact that toxic manifestations apparently identical with those due to hydroxylamine were produced by interrupting an established nitrite metabolism gives a possible explanation of some of the metabolic disorders of sheep grazing pasture of variable nitrate content.—E.V.L.

WEINBREN, K. & FITSCHEN, W. (1959). **The influence of sodium fluoroacetate on regeneration of the rat's liver.**—*Brit. J. exp. Path.* **40**, 107-112. [Authors' summary modified.] **2939**

Sodium fluoroacetate in sublethal doses was



injected into rats at various times after partial hepatectomy. The incidence of hepatic mitoses 28 hours after resection was decreased when the fluoroacetate was given 8 hours but not at 24 hours after operation. Repeated small doses resulted in an increase of mitoses after 4 days. In one series of rats, receiving repeated doses, abnormal mitoses developed.

SCHOENTAL, R. (1959). **Liver lesions in young rats suckled by mothers treated with the pyrrolizidine (Senecio) alkaloids, lasiocarpine and retrorsine.**—*J. Path. Bact.* **77**, 485-495. [Author's summary modified.] **2940**

Administration of the pyrrolizidine alkaloids lasiocarpine and retrorsine to lactating rats poisoned their young, which died with striking liver lesions, even when the alkaloids had no apparent effects on the mother-rats and their milk production. The liver lesions were most severe in the young dying when 3-7 weeks old.

Susceptibility of rats to retrorsine was shown to decrease with age; unweaned rats were most, and adult female least susceptible to its hepatotoxic action.

Attention is directed to the possibility that various liver disorders in childhood may be the result of poisoning by milk from cows consuming senecio.

WALKER, D. J. (1958). **Grain poisoning with sheep nuts.**—*Vet. Insp. N.S.W.* pp. 41-46. **2941**

Outbreaks of suspected grain poisoning in 6 flocks of sheep are described. Death occurred suddenly after several months on the same feed. Lesions were virtually absent if death followed shortly after engorging. Necrosis of the rumen, ulceration of the abomasum, typhilitis and colitis were frequently found P.M.

— R. I. SOMMERVILLE.

WILLIAMS, V. J. & COUP, M. R. (1959). **Preliminary studies on the toxicity of fodder beet to sheep.**—*N. Z. vet. J.* **7**, 8-14. [Authors' summary modified.] **2942**

Sheep dosed with juice expressed from the roots of fodder beet developed acute poisoning with death within 36 hours, or a chronic condition (death within 3 to 15 days). Cane sugar caused a chronic condition only, indistinguishable from that caused by fodder beet.

Fodder beet and cane sugar caused variable haemoncentration, as measured by haemoglobin levels, and deaths were independent of the degree of haemoncentration. In general there was a fall in serum calcium. In most cases, fodder beet but not cane sugar caused a rise in serum magnesium.

The pH, lactic acid concentration, and bacteriological changes in the rumen of sheep dosed with high levels of fodder beet juice or cane sugar are similar to those occurring when glucose or wheat is dosed in large quantities.

None of the biochemical factors measured can account for the acute poisoning due to fodder beet juice.

It is recommended that 6 lb. fresh beet should be the maximum allowance per day for a 100 lb. sheep, or 60 lb. for a 1,000 lb. cow.

PRODANOV, P. (1958). [Cyanogenic properties of vetch seeds in Bulgaria and attempts to detoxicate them.]—*Izv. Inst. Pat. Zhivotni. Sofia* **7**, 191-201. [In Bulgarian. Summaries in English and Russian.] **2943**

Hydrogen cyanide in seeds of *Vicia sativa* in Bulgaria varied from nil to 25.75 mg.%. Seeds could be rendered harmless for livestock by steeping in water at 15° to 20°C. for 4-6 hours, followed by fine grinding. This reduced the HCN in toxic seeds to 0.3-0.4 mg.%.

WATTS, P. S. (1959). **Effects of oxalic acid ingestion by sheep. I. Small doses to chaff fed sheep. II. Large doses to sheep on different diets.**—*J. agric. Sci.* **52**, 244-249 & 250-255. [Author's summaries modified.] **2944**

I. Small doses (3 or 6 g.) of oxalic acid were given daily to sheep. Little was excreted in the faeces, although sufficient calcium was present in the faeces to combine with 12 times the amount of oxalate present. The blood urea value rose, the blood calcium fell and there was an increase in the CO<sub>2</sub>-combining power. Only very small amounts of oxalic acid were found in the tissues after death. Sheep receiving the larger dose showed typical acute changes in the kidneys with deposition of crystals. Little evidence of renal failure or obstruction was obtained, the volume of the urine being maintained and the urea concentration remaining normal.

II. Subacute oxalic acid poisoning was reproduced by the administration of varying doses of oxalic acid. If lucerne was present in the diet or if calcium or strontium was added much larger doses were tolerated. Such an animal excreted large amounts of oxalate in the faeces, and of carbonate and oxalate in the urine. In animals which died the blood urea rose, but the amount of carbonate in the urine did not. In many such animals there was a decrease in blood calcium. It is considered that the major portion of the oxalate is decomposed by bacterial action in the rumen and that the primary

factor in subacute oxalic acid poisoning in sheep is rumen dysfunction due to its effect on the pH of the rumen.

HORVAT, I. & ŠLEZIĆ, M. (1958). Otrovanja austrijskim i kavkaskim divokozjakom (*Doronicum austriacum* i *D. caucasicum*). (Prethodni izvještaj). [*Doronicum* (*Doronicum austriacum* and *D. caucasicum*) poisoning in cattle.]-*Vet. Arhiv.* **28**, 231-235. [In Croat. Summaries in French and German.] **2945**

This is a preliminary note on the toxicity of *Doronicum austriacum* and *D. caucasicum*. Details are given of losses in cattle and experimental work in seven dogs, five lambs and six rabbits.—E.G.

RAMPICHINI, L. (1958). Contributo allo studio delle malattie da fotosensibilità negli animali domestici. I. Contenuto in istamina della cute di "Ovis aries" e rapporti tra effetto fotodinamico e comportamento dell'istamina cutanea. Prove in vitro. [Photosensitization in domestic animals. I. *In vitro* study of the skin histamine in sheep.]-*Arch. Vet. Ital.* **9**, 193-208. [Summaries in English, French, Spanish and German.] **2946**

A good historical and bibliographical survey is given and the phenomenon of photosensitization is discussed in detail. The histamine content of the skin in lambs was studied. It was 5-7  $\mu\text{g./g.}$  in the ear flap and 4.5-6  $\mu\text{g./g.}$  in the flank. In skin exposed to the photodynamic action of eosin there was an 80% decrease in histamine content, as compared with controls.—T.E.G.R.

BROWN, E. B., JR., SMITH, D. E., DUBACH, R. & MOORE, C. V. (1959). Lethal iron overload in dogs. — *J. Lab. clin. Med.* **53**, 591-606. [Authors' summary modified.] **2947**

The cumulative dose of parenterally administered iron required to produce death within 5 to 10 months in each of 5 dogs ranged from 2.5 to 3.3 g. per kg. body wt.; toxic effects began to appear after 2 g. per kg. had been given. The size of the lethal dose was not affected by the type of iron compound used (iron-dextran or saccharated iron oxide) or by the route of administration (i/m, i/p or i/v).

Massive deposition of iron in tissues occurred almost exclusively in cells of the reticulo-endothelial system, with little parenchymal involvement. There was no response of fibrous tissue to iron deposits and no evidence of haemochromatosis.

The mechanism by which the toxic effects were produced and the cause of death were not defined.

BAXTER, J. T. (1959). Some observations on the histopathology of aldrin poisoning in lambs. — *J. comp. Path.* **69**, 185-191. [Author's conclusions modified.] **2948**

B. described the histology of the lesions in 7 lambs which died at intervals of up to 15 days after accidental poisoning with aldrin. Reversible changes, mainly diffuse and focal gliosis and focal degeneration of oligodendroglia and myelin, were present in the fore brain. Neuronal damage was slight. The liver lesion was an acute toxic hepatitis in which a well marked central necrosis had undergone repair by regeneration of liver cells and to a minor degree by replacement with fibrous tissue. An acute nephritis of the renal tubules appeared to be the most important of the original lesions; there was no clear indication that this was undergoing resolution. The terminal lesion was acute pulmonary congestion associated with respiratory failure.

KRUEGER, H. R., CASIDA, J. E. & NIEDERMEIER, R. P. (1959). Bovine metabolism of organophosphorus insecticides. Metabolism and residues associated with a dermal application of Co-ral to rats, a goat, and a cow. — *J. agric. Food Chem.* **7**, 182-188. **2949**

Co-ral [O-(3-chloro-4-methylumbelliferone) O,O-diethyl phosphorothioate or Bayer 21/199], labelled with  $\text{P}^{32}$ , was applied to the clipped skin of rats at the rate of 45 mg./kg. body wt. The blood and all tissues other than skin had an initial peak of radioactivity between 4 and 6 hours after treatment, then a fall before a steady rise to a higher peak after 4-7 days. A cow was sprayed with 40 mg. of Co-ral per kg. body wt., and a lactating goat was painted on the back with 30 mg./kg. In the cow the peak of radioactivity in the blood (0.2 p.p.m. of Co-ral equivalents) occurred 6 days after treatment. The cholinesterase content fell to a half by the seventh day, after which it rose to almost the original content at the end of 2 weeks. In the goat two peaks in radioactivity of the blood were found, one at 6 hours (0.06 p.p.m.) and the second at 5 days after treatment (0.02 p.p.m.). Cholinesterase activity was not greatly affected. No symptoms or P.M. lesions were found in either animal. Excretion in both urine and faeces was important, and four metabolites were detected. A peak of 1.5 p.p.m. of Co-ral equivalents was found in the cow's milk





## PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

TANEJA, G. C. (1959). **Sweating in cattle. V. Sweat prints.** — *J. agric. Sci.* **52**, 168-169. [Author's summary modified.] **2955**

A zebu calf about 7-8 months old was placed in a hot chamber with a temperature of 108°F. dry bulb and 92°F. wet bulb. Sweat droplets were detected by preparing sweat prints on tannic acid papers applied closely to shaved skin areas smeared with ferric chloride solutions. The distribution of sweat spots on the sweat prints is similar to that of sweat glands.

BLIGH, J. (1959). **The receptors concerned in the thermal stimulus to panting in sheep.** — *J. Physiol.* **146**, 142-151. [Author's summary modified.] **2956**

It was shown, in Welsh Mountain sheep, that panting in response to an abrupt rise in environmental temp. need not be preceded by a change in deep body temp. This thermoregulatory response must therefore depend on the stimulation of peripheral thermal receptors. Such changes as were observed in deep body temp. coincident with the onset of panting appear to be passive, and do not modify the respiratory response.

A face mask with an independent temperature-controlled air supply was used to separate temp. receptors in the nasobuccal area from those on the general body surface. Stimulation of the receptors in both the nasobuccal area and elsewhere on the body surface is necessary for the normal respiratory response to raised environmental temp. The receptors on the body surface are the more effective.

SQUIBB, R. L. (1959). **Relation of diurnal temperature and humidity ranges to egg production and feed efficiency of new Hampshire hens.** — *J. agric. Sci.* **52**, 217-222. [Author's summary modified.] **2957**

The effect of environment on the production and size of eggs, feed efficiency and mortality of hens was studied in five areas of Guatemala having temperatures covering a range of 0° to 45°C. with variable degrees of humidity.

While birds housed in the tropical lowlands did show signs of heat stress, there were no significant differences in egg size, production, feed consumption, mortality and body weight between areas or between groups within areas.

BARÝSHNIKOV, I. A. (1959). **Reflex regulation of lactation.** — *Dairy Sci. Abstr.* **21**, 47-53. **2958**

This review is of special value as the

references quoted are mainly from Russian journals published since 1950. Subjects discussed include the initiation and inhibition of milk ejection, milk secretion and its discharge from ducts to cistern, and the development of the udder. Special reference is made to the hormones concerned in lactation. A suggested path for the reflex control of milk ejection is described and the importance of the higher nervous system in individual animals in the process of milk ejection and synthesis is emphasized. It is stressed that lactation is a function of the body as a whole and its control essentially a neuro-hormonal process.

—ELIZABETH J. CASTLE.

UBERTALLE, A. (1957). **Modificazioni chimico-fisiche nel secreto mammario ante-partum e post-partum di bovine primipare.** (Contributo sperimentale allo studio del colostro). [**Chemical and physical changes in the colostrum of primiparous cows before and after parturition.**] — *Ann. Fac. Med. vet. Torino* **7**, 57-65. [Summaries in English, French and German.] **2959**

Ten days before parturition the casein content, in relation to total proteins, was low (8.31%) and rose gradually until it reached the normal level eight days after parturition. The refraction index was low ante-partum and rose rapidly to normal towards parturition.

—T.E.G.R.

SRÉTER, F. A. (1959). **The effect of systematic training on plasma electrolytes, haematocrit value, and blood sugar in Thoroughbred race horses.** — *Canad. J. Biochem. Physiol.* **37**, 273-283. **2960**

In studies on regularly ridden horses and racehorses an increase was observed in the concentration of calcium in serum and of potassium, inorganic phosphorus, and iron in plasma. After a race, a considerable increase was noted in the haematocrit value and in the haemoglobin conc. in trained racehorses, while in regularly ridden horses and Thoroughbreds not in training the increase was not so noticeable. Red cell fragility was increased immediately after the race and cell disintegration caused a transitory but pronounced hyperbilirubinaemia. Also blood samples from Thoroughbreds after a race were hyperglycaemic while in those of regularly ridden horses blood glucose was unaffected or even decreased after strenuous exercise. These experiments support the hypothesis that the hyperglycaemia is the result of an emotional



factor influencing a conditioned nervous response. Racehorses differ from untrained, regularly ridden horses in that the former show reflex red cell mobilization and hyperglycaemia while the latter do not.—C. L'ECUYER.

RASMUSEN, B. A. (1959). **Blood groups, disputed parentage, twins and freemartins in cattle.**—*Illinois Vet.* 2, 31-34. [Author's summary modified.] 2961

Of the 11 blood-group systems in cattle, each contains from 2 to over 4,000 blood types, depending on the system. The total number of different blood types possible in cattle is well over a thousand million. Cattle blood typing can be used to (1) exclude parentage, (2) exclude monozygosity of twins, (3) exclude freemartinism, and (4) identify individual cattle.

WARDROP, I. D. (1958). **The development of rumen function in the lamb.**—*Proc. Aust. Soc. Anim. Prod.* 2, 120-121. 2962

An 18-day lucerne chaff digestibility trial with lambs averaging 59 days of age showed an initial advantage in dry matter and protein digestibility in favour of groups previously fed milk plus lucerne chaff over a group previously fed milk only. These digestibility differences had disappeared by the 12th day.

Two-day-old lambs were fed on ewe's milk replacer for 64 days and then on lucerne chaff *ad libitum*. The pH of rumen contents remained constant at about 7.0, on both diets. Volatile fatty acid levels, which were 5.2 m.mol/litre on the milk diet, rose sharply when lucerne chaff was fed, reaching a peak of 38.8 m.mol/l. within 5 days.—T. GRAINGER.

TRIFONOV, S. (1958). [Influence of pressure in and inflammation of the large intestine on rumen movements in sheep.]—*Izv. Inst. Pat. Zhivotni, Sofia* 7, 123-147. [In Bulgarian. Summaries in German and Russian.] 2963

150 experiments were done on 9 sheep each having 3 fistulas, in the dorsal and ventral parts of the rumen and in the caecum near the ileo-caecal valve. Pressures above 65 mm. Hg. exerted by a balloon in the rectum increased the frequency of contractions of the rumen. Pressures of 85-100 mm. Hg in the caecum inhibited rumen contractions and caused atony under certain conditions. Inflammation of the rectum or caecum caused by silver nitrate solution or hot water had much the same effects as pressure.

—R.M.

DOBSON, A. (1959). **Active transport through the epithelium of the reticulo-rumen sac.**—

*J. Physiol.* 146, 235-251. [Author's summary modified.] 2964

A mechanism inducing 'active' absorption of sodium is present in the epithelium of the reticulo-rumen sac. It can drive sodium from the sac contents into the plasma against the concentration and electrical gradients of this ion.

The importance of this pump in the sodium economy of the sheep is discussed.

Movements of chloride from plasma to contents of the reticulo-rumen sac can take place against electrochemical potential difference in the presence of high potassium and low sodium concentrations.

Changes in the steady state of chloride and sodium in the rumen epithelium do not contribute significantly to changes in the rumen.

DAVISON, A. N., DOBBING, J., MORGAN, R. S. & WRIGHT, G. PAYLING. (1959). **Metabolism of myelin: the persistence of (4-<sup>14</sup>C) cholesterol in the mammalian central nervous system.**—*Lancet* March 28th, 658-660. [Authors' summary modified.] 2965

Radioactive (4-<sup>14</sup>C) cholesterol was injected into 17-day-old rabbits—an age when myelinization in the central nervous system is proceeding. It persisted in the c.n.s. of animals killed up to 365 days later, although it disappeared within a few months from the heart, liver, kidneys and plasma. In the grey matter there was evidence of "turnover" during the first few months, while in the white matter there was little indication that cholesterol, once incorporated, was later lost. The radioactive cholesterol recovered from the brain 365 days after injection still retained its radioactive carbon atom at the original 4-C position. It seems that the myelin lipids remain indefinitely in the nerve-sheaths where they were laid down during the development of the c.n.s.

MARSHALL, J. H., WHITE, V. K. & COHEN, J. (1959). **Microscopic metabolism of calcium in bone. I. Three-dimensional deposition of Ca<sup>45</sup> in canine osteons.**—*Radiation Res.* 10, 197-212. [Authors' summary modified.] 2966

In two adult dogs, one young, the other middle-aged, regions of Ca<sup>45</sup> uptake in the osteons had an average length of 2 mm. This agrees with the length of resorption cavities found histologically. The most active regions of uptake were about 1 mm. long. No consistent correlation was found between the locations of vascular connexions to osteons and the limits of the regions of deposition. The deposits of Ca in osteons can be explained qualitatively in

terms of the formation of new bone in locations governed primarily by previous resorption tunnelling.

HARTREE, E. F. & MANN, T. (1959). **Plasmalogen in ram semen, and its role in sperm metabolism.**—*Biochem. J.* **71**, 423-434. [Authors' summary modified.] **2967**

Lipid consisting largely of plasmalogen was extracted from ram semen and analysed for its content of fatty aldehyde, acyl ester and phosphorus. In fresh ram semen most of the plasmalogen was in the spermatozoa at a concentration of about 1.2 g./100 g., a value which exceeds those encountered in other animal tissues. Plasmalogen was also found in the spermatozoa, seminal plasma and accessory secretions of other animal species.

MYANT, N. B. & OSORIO, C. (1959). **Serum proteins, including thyroxine-binding proteins, in maternal and foetal rabbits.**—*J. Physiol.* **146**, 344-357. [Authors' summary modified.] **2968**

The serum from foetuses aged 17 to 30 days and from new-born and adult rabbits was examined by paper electrophoresis. The concentration of protein in each electrophoretic fraction was also determined.

At the 17th day of pregnancy albumin and gamma globulin were not detectable in foetal serum. Albumin appeared at the 19th day. From then until birth the protein composition changed towards that of adult serum, but did

not become indistinguishable from this until the second week of post-natal life.

In adult serum, thyroxine was bound by a protein (adult thyroxine-binding protein or TBP) which moved between albumin and the alpha 1 globulin on paper electrophoresis. Foetal serum did not contain detectable amounts of adult TBP until the 28th day of pregnancy. From about the 19th day of pregnancy, foetal serum contained a binding protein (foetal TBP) which moved between the alpha 2 and beta globulins.

The binding capacity of the foetal TBP in serum from a 25-day-old foetus was about  $\frac{1}{10}$  that of adult TBP and the affinity of the foetal protein for thyroxine was about five times that of adult TBP. The role of foetal TBP in determining the distribution of thyroid hormone between mother and foetus is discussed.

SMITHIES, O. (1959). **An improved procedure for starch-gel electrophoresis: further variations in the serum proteins of normal individuals.**—*Biochem. J.* **71**, 585-587. [Author's summary modified.] **2969**

A technique is described for starch-gel electrophoresis in a vertical direction. This allows the sample to be introduced into the gel without any supporting substance. Resolving power and reproducibility are much improved. Evidence is presented suggesting that genetic factors are involved in the variations, between individuals, of the serum proteins which migrate immediately behind albumin.

See also absts. 3013 (book, diseases of swine); 3014 (book, isotopes); 3017 (book, anatomy).

## PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

See absts. 2861-2862 (*Cysticercus bovis*).

## REPRODUCTION AND REPRODUCTIVE DISORDERS

ANGEL, H., SCHINDLER, H. & MARKS, J. (1959). **[Streptomycin in bull semen diluent for artificial insemination.]—Refuah vet.** **16**, 4-6. [In Hebrew.] [In English, p. 50. Summary modified.] **2970**

The addition of 500  $\mu$ g. of dihydrostreptomycin sulphate/ml. of citrate-sulphanilamide-egg yolk diluent did not significantly improve fertility (as measured by 60-90 day non-return rates), nor decrease the percentage of delayed return.

FUJII, S. (1958). **Morphological observations on various spermatozoa with a new staining method.**—*J. Fac. Fish. Anim. Husb. Hiro-*

*shima Univ.* **2**, 87-92. [In English. Author's summary modified.] **2971**

A new silver method was described for the staining of spermatozoa. Smears of spermatozoa, fixed with 10% formalin and treated with a dilute gold chloride solution, were then impregnated with silver nitrate solution and finally reduced with hydroquinone. The principle is that the middle-piece of the spermatozoa is selectively stained a dark violet. With a slight modification of the original method, the spiral filament in the middle-piece (derived from mitochondria and usually not stained by the ordinary method) may be demonstrated easily. The method is therefore especially suitable for the study of



the fine structure of the middle-piece as well as its general morphology. The middle-piece of spermatozoa of various species was studied and the abnormalities demonstrated in photographs.

**KNIGHT, P. R. (1958). Ulceration of the galea glandis in Border Leicester rams during service.—*Aust. vet. J.* 34, 440. 2972**

K. attributes this condition to abrasion during service with subsequent bacterial infection. He suggests that this may be the primary cause of necrotic posthitis with gangrenous penis which causes death in British breeds.

—L. LLOYD.

**DZIUK, P. J., DONKER, J. D., NICHOLS, J. R. & PETERSEN, W. E. (1958). Problems associated with the transfer of ova between cattle.—*Tech. Bull. Univ. Minn. agric. Exp. Sta.* No. 222. pp. 75. 2973**

This Bulletin is conveniently divided into six parts, each with its own summary and reference list and incorporating some original work. 76 superovulation attempts (involving 45 cows) were made; follicle stimulating hormone preparations were injected on the 15th day of the cycle, and luteinizing hormone on the 20–21st day. Not all ova shed could be recovered; only a low proportion of those recovered were fertilized. Attempts to improve non-surgical methods of recovery of ova from intact cows resulted in only 11 recoveries in 74 trials by flushing the uterus. Aqueous progesterone suspensions, 50 or 60 mg. per day, for 3–12 days, were successful in synchronizing the next oestrus to the 4–6th day after cessation of treatment in 71% of subjects. Although 16 non-surgical ovum transfers produced no pregnancies, intra-uterine "insemination", 5 days after service, with material used to flush other uteruses did not prevent normal breeding in 5 of 8 cows tested. A cyclic histological study on 161 biopsy samples revealed much individual variation. Physiological uterine activity always began to decline from the tenth day. A modification of the instrument for direct inspection of the genital organs of cows gave promising results.

—F. L. M. DAWSON.

**HANCOCK, J. L. (1958). The examination of pig ova.—*Vet. Rec.* 70, 1200–1201. 2974**

Ova are fixed and cleared for 24 hours with fresh acetic alcohol 1:3 and may be stained with acetocarmine for a further 24 hours. This enables clear demonstration of the nuclei during the stages of ovum maturation, under the phase-

contrast microscope. The technique enables accurate judgment as to whether fertilization has taken place.—F. L. M. DAWSON.

**ERB, R. E. & HOLTZ, E. W. (1958). Factors associated with estimated fertilization and service efficiency of cows.—*J. Dairy Sci.* 41, 1541–1552. 2975**

9,302 fertilizations of 2,607 Friesian cows over 30 years were analysed. Return intervals of 26–36 days were considered as evidence of early foetal death. Overall this incidence was 20.6% of fertilizations. The rate was significantly higher in heifers (26%) than in cows of all ages (11.4%). Fourth and fifth-calf cows carried a higher percentage to term than other cows. After oestrous cycles of obvious genital infections, and cystic ovaries, embryo loss was from 29–40%. The rate was also significantly raised after an abnormal calving.

—F. L. M. DAWSON.

**HICKEY, F. (1958). Sheep fertility in New Zealand. Suggested means of improving lambing percentages.—*N. Z. Agriculturist* 11, No. 2. pp. 6–7. 2976**

Lambing percentages show a steady regional increase (86 to 111%) from the north of New Zealand southwards. Experimental work with artificial lighting has indicated that the anterior pituitary (and hence reproductive function) is specifically stimulated by decreasing light; hence latitude (sunlight intensity and rate of change in day length) may be the root cause of these variations in fertility. An almost constant (2.28–2.41) quotient was obtained by dividing lambing percentage by degrees of south latitude for 10 regions and correlation was highly significant statistically. Hart (1951) suggested that midday housing for 2 hours in a dark shed might suffice in commercial practice to advance the breeding season by a six week period of great economic importance.—F. L. M. DAWSON.

**ERB, R. E., HINZE, P. M., GILDOW, E. M. & MORRISON, R. A. (1958). Retained fetal membranes—the effect on prolificacy of dairy cattle.—*J. Amer. vet. med. Ass.* 133, 489–496. 2977**

2,607 Friesian cows calving 7,387 times over a 30 year period showed an overall retention rate of 6.7% for normal and of 16% for stillborn single calves. The cows which retained were subsequently significantly less fertile and showed a strong tendency to repeat retention. After the fourth calving the incidence rose steeply, to 14%. Over several years of progres-

sive elimination of recognized genital disease, the abortion rate fell from 13% to 5%, but the rate of placental retention remained unaffected. It was significantly higher from July–October. Evidence was obtained of a heritable tendency to retain the placenta, transmissible through either parent.—F. L. M. DAWSON.

GOSSETT, J. W. & SORENSEN, A. M., JR. (1959).

**A comparison of embryo survival in gilts slaughtered twenty-five versus forty days after breeding.**—*J. Anim. Sci.* **18**, 48-54.

[Authors' summary modified.] **2978**

Data were collected from 85 gilts to evaluate the difference in intra-uterine mortality at 25 and 40 days of pregnancy. An additional 5% of mortality was found in the additional 15 days of pregnancy, and it would therefore seem preferable to slaughter gilts at 40 days of gestation to obtain an estimate of intra-uterine mortality.

ERB, R. E., EHLERS, M. H. & MORRISON, R. A. (1958). **Environmental influences on frequency of estrous cycles.**—*Bull. Inst. agric. Sci., Wash. agric. Exp. Sta.* No. 58. pp. 28. **2979**

28,639 oestrous cycles in cows were analysed, of which 20,229 were 2–35 days in length, averaging 21 days, with 72% within the 18–25 day range. Cycles were classified into four groups, according to whether or not service was allowed at the previous heat and whether or not reproductive abnormality was observed during the service period. The proportions of these groups did not vary according to whether natural service or artificial insemination was used. Significant yearly differences were found chiefly in the ratio of normal to abnormal non-service cycles, but interactions between years and types of cycles were not significant. The proportion of 18–25 day cycles was lowest in December, highest in late summer. Cystic ovary cases accounted for 20% of service and 51% of non-service cycles 2–17 days in length.

—F. L. M. DAWSON.

BLACKLEDGE, G. T. (1958). **Semen production and reserves of dogs under two management and nutritional regimes.**—*Thesis, Cornell* pp. 49. **2980**

Since there is little information on semen production in dogs maintained under control conditions, the author attempted to determine the effect of diet and exercise on semen quality, spermatozoa production, and libido. The effect of frequent collection and rapidity of return to pre-exhaustion levels was also noted. Nine dogs were used in each group.

In all tests the group on a standard diet with free exercise was lower in spermatozoa production and motility than those fed a commercial diet with limited exercise although the dogs in the former group appeared to be in better physical condition. Spermatozoa production was 50% lower in the dogs on the standard diet, but recovery of spermatozoa production was complete in each group after a five days rest. The author feels that a stud dog can be used regularly at 2–3 day intervals with the possibility of using twice a day providing he is given adequate rest.—H. L. GILMAN.

MCLEAN, J. W. & CLAXTON, J. H. (1958).

**Vaginal prolapse in sheep—Part IV. Cyclic changes in the vulva, vestibule, and vagina during the year.**—*N. Z. vet. J.* **6**, 133-137. **2981**

Cyclic changes in the vagina, vestibule and vulva were followed in four Romney ewes over a year, beginning 6 weeks after lambing. The extent to which the vulva and vestibule were distensible was measured by a specially designed instrument, vaginal dilatability by a balloon technique. Dilatability and distensibility are minimal 6 weeks after the end of the breeding season, rise slowly till the onset of the next one and then rapidly to a plateau almost halfway through the season. No clear cyclic pattern of alteration could be detected, except for the marked increase during heat.

—F. L. M. DAWSON.

STOKOE, W. M. (1959). **Observations on the effects of gonadectomy and subsequent injection of testosterone on the adrenals of male sheep.**—*J. comp. Path.* **69**, 216-222.

[Author's conclusions modified.] **2982**

The adrenal cortex of male sheep, whether castrated or not, has a definitive zona reticularis.

Structural alterations demonstrable in the width of the zona reticularis were correlated with the sexual condition of the sheep under experimental conditions. The ratio of the width of the zona fasciculata to that of the zona reticularis was as follows: 2.51/1 in non-castrated adult males; 1.04/1 in castrated adult males; in castrates injected with testosterone propionate (200, 400 and 600 mg.) the ratio was, respectively, 2.08/1, 2.11/1, 2.12/1.

BELGIUM. (1959). **Comite voor steriliteitsbestrijding veeartsenijschool—Gent. Verslag over het werkjaar 1958. [Committee for sterility control at the Veterinary School of Ghent. Report for 1958.]** [VANDEPLASSCHE,



M. & BOUCKAERT, J. H.].—*Vlaams diergeneesk. Tijdschr.* **28**, 63-69. [In Flemish. Summary in English.] **2983**

With the recession of trichomoniasis and vibriosis, the chief cause of sterility in bulls was degeneration of the seminal epithelium accompanied by poor spermatogenesis. In 3 boars of low fertility the only abnormality found was a high incidence of protoplasmic droplets in the tail of spermatozoa. Anoestrus in mares was successfully treated with warm intra-uterine infusions. While hormone therapy could hasten the ovulation of a ripening follicle, it was useless when no follicles could be palpated. The importance was stressed of treating endometritis in mares during involution of the uterus.—R.M.

MARX, D. & KUNTZE, A. (1958). Samenstauung und Nebenhodendysplasie, zwei seltene Fälle von Unfruchtbarkeit beim Bullen. [Seminal congestion and epididymal dysplasia as cause of sterility in two bulls.] — *Zuchthyg. FortpflStörung. u. Besamung* **2**, 372-377. **2984**

A communal bull started service when 14 months old and settled his cows satisfactorily until he was 32 months old and then over 4-5 months slowly declined in fertility. On palpation both the epididymal heads were much, but asymmetrically, enlarged. Ejaculate was watery and spermatozoa-free. The epididymal heads contained several hard knotty foci, yielding ivory coloured viscous fluid. The testicles were very soft. Some of the vasa efferentia were expanded to cherry size, with spermatozoa and spermatids blocking them. Near the large foci several vasa appeared filled with an "inflammatory" type of granulation tissue—fibroblasts and histiocytes. In the right testicle necrotic spermatids were evident. The gradual onset of infertility seems to have arisen from the bulging of the congenitally obstructed ducts with semen causing pressure blocks in the neighbouring patent vasa. The granulation tissue was a reaction to the "foreign body" stimulus of the obstructed ducts. A second bull never sired calves and could rarely thrust. The epididymal heads were small-blackberry size; asymmetric; the body and tail were very small and the testicles turgid on palpation. Some of the vasa efferentia were cystically expanded, full of debris, and some shrivelled. There was little evidence of canal system in the body. Testicular tubules contained only degenerate spermatids etc. The authors concluded that the condition was congenital.—F. L. M. DAWSON.

LISS, J. & KRAUSE, D. (1958). Zum Vorkommen des sogenannten "Akrosom-Defektes" im Ebersperma. [Malformation of spermatozoa associated with sterility in a boar.]—*Dtsch. tierärztl. Wschr.* **65**, 677-679. [Summary in English.] **2985**

The authors claim that the acrosome is normally present during development but absent from ripe mammalian spermatozoa. The boar studied proved completely infertile on 5 sows. Three ejaculates were collected having a normal motility and a mean density of 350,000 spermatozoa per cu. mm. *Pseudomonas pyocyanea* was recovered in culture and abnormal spermatozoa were estimated at over 90%. 71-85% were considered to show the persistent acrosome, directly under phase contrast, often associated with presence of plasma droplets.—F. L. M. DAWSON.

DEATON, O. W., OLDS, D. & SEATH, D. M. (1959). A study of some possible genetic causes of mummified fetuses in dairy cattle. —*J. Dairy Sci.* **42**, 312-314. [Authors' summary modified.] **2986**

23 mummified fetuses were recorded among 1,509 pregnancies of 504 cows. Thus, mummified fetuses were produced by 3.7% of the cows and in 1.5% of the observed pregnancies. It was found that 29.9% of the pregnancies resulted in mummified fetuses in those cows which produced mummies. On the other hand only 4.2% of the offspring of the 20 bulls which were known to have sired mummies, were mummies. Chi-square values, used to test the closeness of fit of various observed ratios to expected Mendelian ratios regarding the occurrence of normal males and females and mummified fetuses, indicated that mummification may be due to a sex-linked recessive lethal gene.

ZWIEP, I. N. (1958). Blind geboren lammeren. [Congenital blindness in lambs.]—*Tijdschr. Diergeneesk.* **83**, 1220-1222. [In Dutch. Summaries in English, French and German.] **2987**

In a group of 6 ewes, 2 of 11 lambs were born with microphthalmia. Another 6 ewes in the same flock received 4 monthly injections of a vitamin A preparation during pregnancy: none of their 10 lambs were blind.—R.M.

MARKSON, L. M., TERLECKI, S., SHAND, A., SELLERS, K. C. & WOODS, A. J. (1959). Hypomyelinogenesis congenita in sheep. —*Vet. Rec.* **71**, 269-271. [Authors' summary.] **2988**

A congenital disease of lambs is described, characterised clinically by trembling or chorei-

form twitching, ataxia and sometimes shaking of the head, and histologically by defective formation of myelin in an otherwise normal nervous system. The cause is unknown.

STROMBERG, M. W. (1959). **Studies on myoclonia congenita. III. Drugs and other factors affecting severity of tremor in pigs.**—*Amer. J. vet. Res.* **20**, 319-323. [Author's summary modified.] **2989**

Observations were made on 1,000 pigs with myoclonia congenita, both conscious and anaesthetized. Epinephrine, administered parenterally, aggravated the tremor and often caused a temporary resumption in recovered pigs. These effects lasted up to 24 hours in some pigs. Sub-clinical cases were demonstrated by the injection of epinephrine. Effects of the administration of other drugs were also reported.

DYRENDahl, S. (1958). **Hereditary tremor in ducks.**—*J. Hered.* **49**, 214-216. **2990**

D. described congenital tremor, a recessive, hereditary defect in ducklings hatched from eggs of inbred ducks in Sweden. Most of the birds, unable to feed, died during the first few days after hatching. P.M. no histological lesions were demonstrable in the c.n.s.—E.G.

MARKSON, L. M., CARNAGHAN, R. B. A. & YOUNG, G. B. (1959). **Familial cerebellar degeneration and atrophy — a sex-linked disease affecting Light Sussex pullets.** — *J. comp. Path.* **69**, 223-230. [Authors' conclusions modified.] **2991**

Clinically the disease appeared as slight ataxia with fine tremors of the head and neck. Histologically there was degeneration of the cerebellar Purkinje cells and nerve cells of the granular layer, with consequent atrophy of the cerebellum. The disease appeared to be associated with a sex-linked recessive gene.

See also absts. 3005 (report, Netherlands).

## ZOO TECHNY

HAYES, F. A., JENKINS, J. H., FEURT, S. D. & CROCKFORD, J. A. (1959). **The propulsive administration of nicotine as a new approach for capturing and restraining cattle.** — *J. Amer. vet. med. Ass.* **134**, 283-286. [Authors' summary modified.] **2994**

See also absts. 3001 (report, Cyprus); 3002 (report, Mauritius); 3004 (report, Uganda); 3013 (book, diseases of swine).

## TECHNIQUE AND APPARATUS

BOLAFFI, A. & LITSKY, W. (1959). **Studies on the use of plastic Petri dishes for the cultivation of bacteria.** — *J. Milk Tech.* **22**, 67-70.

ASHTON, G. C. (1958). **Lack of 'slow-alpha' proteins in some Guernsey cattle.**—*Nature, Lond.* **182**, 193-194. **2992**

Out of 2,500 cattle whose serum has been examined by starch gel electrophoresis, only a 5-year-old Guernsey cow and her heifer calf have been found to lack a slow alpha (Sa) protein zone. Sa protein appears to be controlled by a pair of allelomorphic genes Sa<sup>a</sup> and Sa<sup>o</sup>. Animals lacking Sa protein were in good health, showed no signs of abnormalities and gave milk yields above the average.—A. ACKROYD.

PLUM, M. (1959). **Hetero blood types and breeding performance.**—*Science* **129**, 781-782. [Author's abst. modified.] **2993**

Hybrid vigour depends to some extent on the diversity of the genes of the parents. Results are presented suggesting that diversity of cellular antigens might be used as an indicator of genetic diversity.

To study whether similarity or dissimilarity of mates influences the probability of survival of the young, a tabulation was made of 1,264 matings between 310 females and 32 males of the Holstein-Friesian breed, in which the presence or absence of 20 different cellular antigens had been determined. Only matings between supposedly fertile animals were included.

The matings were classified on the basis of the number of cellular antigens in which the two mates differed.

The rate of survival increased as the difference in antigens increased.

No claims are made that cellular antigens are responsible for fertility and successful embryonic development. However, dissimilarity of antigens may be used as an indicator not only of dissimilarity of genes affecting blood antigens but of dissimilarity of other genes affecting productive traits.

In 134 trials using nicotine for immobilizing cattle by means of a syringe fired from a rifle, the findings indicated that i/m administration of nicotine (1.5 mg./lb. body wt.) might prove to be a valuable adjunct to present methods of handling livestock.

[Authors' summary modified.] **2995**

In studies to determine whether plastic Petri dishes affected bacterial growth when used



in routine bacteriological examinations, no evidence of toxicity was demonstrable by the pour plate and streak plate techniques, growth curve and Warburg studies, and the phenol detection method. The wetting property of water for these dishes was less than for glass dishes. The rate of water loss from media in plastic dishes was not greater than that from media in glass dishes. The plastic dishes were inert to inorganic and organic acids.

LALANNE, A. (1958). Une machine à glace pour équipes mobiles d'immunisation. [**A mobile freezer for use by immunization units.**] — *Rev. Elev.* **11**, 447-456. [Summaries in English and Spanish.] **2996**

See also absts. 2726 (phage-typing); 2971 (staining of spermatozoa); 3014 (hook, isotopes).

## REPORTS

GREAT BRITAIN. (1956-57). **The Animal Health Trust, Ninth Report 1956-1957.** pp. 78. London: The Trust. **2998**

The work of the Trust can be divided into three sections; education; specific investigations into diseases; and consultative and diagnostic services.

To encourage veterinary education and research in the Universities, the Trust makes grants to undergraduates, and to young graduates.

The Trust entered into the newly built research station at Stock, Essex, in May 1957. Amongst research carried out was that on **JOHNE'S DISEASE** in cattle, a sterility survey in cattle, **RINGWORM** and **SCOURS** in calves.

The Equine Research Station is unique in that it deals exclusively with horses. It is hoped that it may become the most important centre for study of health and disease in horses in the British Commonwealth.

In the Canine Research centre in the period under review routine diagnostic work covered 1,831 cases, these being investigated by the pathological, bacteriological, biochemical, serological and virology laboratories.

The Houghton Poultry Research Station in Huntingdonshire is an independent centre financed jointly by the Trust and the Agricultural Research Council. A list of its extensive work is given.—D. S. RABAGLIATI.

GREAT BRITAIN. (1957). **Committee for Colonial Agricultural, Animal Health and Forestry Research Twelfth Annual Report, 1956-1957.** pp. 19-129. London: Agricultural Research Council. [Items of veterinary interest paras. 64-83.] **2999**

L. described a small petrol-driven compressor machine for making ice, which could be carried in the back of an estate car. It produced 4.5 kg. of ice in 2-3 hours at an ambient temp. of 45°C. and was used under field conditions to provide ice for storing vaccines against Teschen disease, rabies, and other diseases.—R.M.

LAMBIE, D. A. (1959). **Radiochemical tracer analysis: a new approach resulting in increased accuracy.** — *Analyst* **84**, 173-176. [Author's summary modified.] **2997**

The errors in radioactive tracer analysis may be reduced by measuring the unseparated rather than the separated fractions of the radioactivity.

The chief event of the year for the East African Research Organization was the formal opening of the new laboratories at Muguga North, on the 21st February 1957. Good progress was made in recruitment of the scientific staff.

The most important research on **RINDERPEST** was the successful cultivation of the virus on bovine kidney cells. It was shown that rinderpest virus is cytopathogenic and that the cytopathic effects can be neutralized by sera from rinderpest-immune cattle, goats, hamsters and rabbits. The virus has also been cultivated on bovine embryonic testis. These findings are of great significance.

Research has also been started on **AFRICAN SWINE FEVER** and **RIFT VALLEY FEVER**.

Investigations on **BOVINE CONTAGIOUS PLEUROPNEUMONIA** comprised two main lines of work: the improvement of avianized vaccine, and study of the serology of the disease.

It has been found that the course of **EAST COAST FEVER** depends on the number of ticks infesting the animals, but even more particularly on the origin of the calf; calves of exotic breeds and of zebu stock from areas free from the disease are highly susceptible, while those of immune stock show considerable resistance.

Much other valuable work has been carried out on East African ticks, the life history of amphistomes of ruminants, and the nutritive value of foodstuffs.—D. S. RABAGLIATI.

NORTHERN IRELAND. (1958). **Agricultural Research Institute, Hillsborough, Co. Down. Thirty-first annual report, 1957-1958.** pp. 38. Hillsborough: The Institute. [Items of veterinary interest pp. 31-35.] **3000**

Observations on parasitism in intensively managed ewes and lambs were continued. The animal health aspect with special reference to the epidemiology of NEMATODIRUS DISEASE was studied by the Veterinary Research Division. The spring peak of nematodirus infective larvae on the grass occurred in March after contamination of the pastures the previous year. Both *N. filicollis* and *N. battus* occurred together and reached their peak about the same time. *N. filicollis* predominated. It was concluded that neither age immunity nor specific acquired immunity to nematodirus is absolute in lambs.

In experiments on GASTRO-ENTERITIS in calves, faeces were examined during the period of observation and it was found that strongyle egg output was related to the clinical picture. When a succession of susceptible calves was grazed on a small area the build up of parasitic infection between pasture and calves may have been sufficient to give rise to severe manifestations of illness in the later introduced calves, even when the original contamination of the pastures took place in the previous autumn.

Trials of cyanacethydrazide for PARASITIC BRONCHITIS were made, but the disease ran its usual course in treated and untreated animals alike, the latter progressing as well as the treated.

Research on PULPY KIDNEY DISEASE in sheep and STAPHYLOCOCCAL MASTITIS in cattle was also carried out.—D. S. RABAGLIATI.

CYPRUS. (1957). **Annual report for 1957. Supplementary report VI. Annual report of the chief Veterinary Officer for 1957.** [ORHAN, A.] pp. 31. 3001

There were extensive outbreaks of FOOT AND MOUTH DISEASE and 36,000 cattle were inoculated with monovalent "A" and bivalent "OA" type vaccine during March and April. No further outbreaks occurred after the middle of April or new cases in the infected herds. 6,000 young cattle were re-vaccinated during August. At the beginning of September outbreaks were confirmed in two villages among pigs. No suitable vaccine was available and the political situation made slaughter impossible. Quarantine measures alone were applied and the infected pigs recovered in about four weeks. About the middle of October outbreaks in new areas among sheep and goats occurred in a mild form and were slow in spreading, but in about three weeks the disease had become more virulent as it spread. The lesions were very severe, with shedding of claws in some cases. Deaths were confined to the lambs and in some flocks amounted to 60%. Quarantine measures could

not be applied effectively owing to lack of co-operation by the breeders. No cattle became infected but the in-contacts were re-vaccinated. Type "A" virus caused the disease in sheep and goats.

SHEEP POX outbreaks started in November 1956 and spread by flock owners visiting the infected flocks to see this new disease. When vaccine was imported, flocks in and around the infected areas were inoculated. Over 509,600 sheep and lambs were vaccinated in seven weeks. Aluminium-gel vaccine, prepared locally, was also used. Losses did not exceed 2% but in one village the deaths amounted to 25% of the adults and 50% of the lambs. After much opposition a re-vaccination of sheep, when the disease broke out again in the autumn, was accepted by owners of 381,00 sheep and lambs. As deaths of the lambs continued in cold and wet conditions re-vaccination was given every 15 days. In some cases lambs were born with pox lesions.

The ENTEROTOXAEMIA group of diseases occur in spring and autumn and are attributed to the lush grass in the one and the poor dry conditions in the latter. Losses are mainly among non-vaccinated animals. 42,000 animals were vaccinated.

Only three cases of BLUETONGUE were confirmed. A single outbreak of ovine SALMONELLOSIS (*S. typhi-murium* infection) occurred in five sheep and three died.

Ovine ABORTIONS were very prevalent, many caused by SHEEP POX reactions.

Other diseases mentioned—

PARASITIC GASTRO-ENTERITIS—Phenothiazine and/or copper sulphate are used. 70,000 sheep and goats were drenched.

COCCIDIOSIS affects sheep, goats and poultry. Treatment is with mepacrine hydrochloride or guanidine in sheep and goats and in poultry with 16% sulphadimidine soln.

LIVER FLUKE. There was a considerable reduction in the numbers of livers infested, reported at the slaughter houses and by village butchers, as a result of the measures applied. These were the treatment of snail-infested river-banks and pools with copper sulphate, and the treatment of infected flocks by intra-ruminal injections of carbon tetrachloride.

NEWCASTLE DISEASE occurred in 50 villages and was still spreading at the end of the year.

Many outbreaks of FOWL POX occurred. 80,000 doses of vaccine were used and several thousands of infected birds treated with hexamine with excellent results. FOWL TYPHOID is endemic. A chronic respiratory disease, which



is new to Cyprus, caused losses in flocks of up to 20%. Other conditions in poultry causing losses were INFECTIOUS CORYZA, NEUROLYMPHOMATOSIS and SPIROCHAETOSIS.

The Laboratory report by R. W. Crowther, V.O. (Research) gives details of the production of vaccines. Over 2½ million doses of vaccines were issued of the 4,175,000 doses produced—133,000 doses were imported and 80,000 exported.

Cyprus is free from bovine tuberculosis and from rabies.

**LIVESTOCK CENSUS.** Horses and mules 11,354; donkeys 47,737; cattle 34,716; sheep 361,337; goats 182,041; pigs 36,025 and camels 308.

About 1½ million inoculations were given by the Field Staff of 5 Veterinary Officers, 7 Veterinary Inspectors and 7 Veterinary assistants.

—J. A. GRIFFITHS.

**COLONY OF MAURITIUS. (1958). Annual report of the Department of Agriculture, 1956.** pp. 80. Port Louis, Mauritius: J. Eliel Felix, Govt. Printer, Rs. 1. 25. [Items of veterinary interest pp. 31-35.] **3002**

A cattle census showed 38,039 cattle of which 20,481 were crossbred and 17,558 Creole cattle, as against 19,891 in 1930. The total cattle of all classes was 42,168 as against 31,869 in 1930, but the "herd" and draft cattle have greatly diminished. The high incidence of TUBERCULOSIS is largely responsible for the drop in "herd" cattle and mechanization for the drop in draft cattle. The policy is to improve the Creole stock by selection within the existing breed rather than by importation of European cattle.

During the year, 1,078 "herd" cattle and 396 milch cattle were tuberculin tested: 7% and 2% respectively were reactors and were destroyed. No other tests could be carried out as the post of Veterinary Officer remained vacant throughout the year.

The main diseases affecting milch cattle were deficiency ailments; mostly RICKETS due to inadequate diet.

NEWCASTLE DISEASE has been kept under control by locally prepared *oral* vaccine. FOWL POX was also controlled by vaccine.

—D. S. RABAGLIATI.

**COLONY OF NORTH BORNEO. (1958). Annual Report of the Department of Agriculture for the year 1957.** [BERWICK, E. J. H.] pp. 60. Jesselton: Government Printing Dept. 4s. 6d. **3003**

During 1957 North Borneo has remained

free from major epizootics. Buffaloes, cattle, pigs and goats have greatly increased in number during the last five years.

Pigs are reasonably free from serious diseases but KIDNEY-WORMS and LUNGWORMS are found in nearly all pigs slaughtered in the abattoirs.

Poultry have doubled in numbers during the last five years. Vaccination of poultry against NEWCASTLE DISEASE and FOWL POX continues and is the most important single activity of the Veterinary Department.

Although the remainder of the ponies that were old cases of SURRA had been destroyed early in 1957, four fresh cases were reported and the ponies destroyed, but there were one or two deaths in some areas which might have been due to surra. A number of blood films taken from infected ponies showed trypanosomes longer than those seen previously. During the year 3,355 blood smears were examined and 225 prophylactic injections of "Antrypol" (suramin) given. No trypanosomes were found in buffaloes or cattle.

The Veterinary Laboratory had a satisfactory year and much of its work was on helminths in cattle and buffaloes, but the greatest problems were virus diseases in poultry. Details of the work are summarized in an appendix.

—D. S. RABAGLIATI.

**UGANDA PROTECTORATE. (1958). Annual Report of the Department of Veterinary Services and Animal Industry for the year ended 31st December, 1957.** pp. 45. Entebbe: Govt. Printer. Shs. 3/50. **3004**

The health of livestock was generally satisfactory. Uganda now carries 3,308,000 cattle and 3,777,000 sheep and goats.

The Disease Prophylaxis Service worked smoothly and gave stock-owners who were prepared to pay for vaccines protection against a wide range of diseases. The Government issues (free of charge) vaccines for RINDERPEST, BOVINE CONTAGIOUS PLEURO-PNEUMONIA, RABIES (in proclaimed Rabies Districts) and in some cases ANTHRAX.

To retain barrier zones of RINDERPEST-immune cattle in areas bordering on Karamoja and southern Sudan, where the disease is enzootic, 53,000 susceptible yearling cattle were immunized with capripized virus vaccine and a further 57,600 with lapinized virus vaccine.

TRYPANOSOMIASIS control involved the treatment of 188,400 cattle with antrycide dimethyl sulphate.

At Entebbe routine disease diagnostic services were maintained.

HAEMORRHAGIC SEPTICAEMIA was again prevalent in Western Buganda and EAST COAST FEVER enzootic throughout the greater part of the Protectorate. FOOT AND MOUTH DISEASE was prevalent over much of the Protectorate and six virus samples were sent to the Animal Virus Research Institute at Pirbright; three were typed as Vallée "A" and one as Vallée "O".

TUBERCULOSIS is prevalent in Ankole cattle, about 40% being infected, but generalized disease is rare. The disease is rare in zebu cattle in Uganda.

Parasitic diseases of cattle, sheep and goats are widespread and a large proportion of calf mortality is due to PARASITIC GASTRO-ENTERITIS and COCCIDIOSIS. FASCIOLIASIS results in the condemnation of 60% of the bovine livers in urban abattoirs.—D. S. RABAGLIATI.

NETHERLANDS. (1958). Mededeelingen betreffende de Gezondheidsdienst voor Vee in Friesland. 393 jaarverslag 1 Mei 1957–30 April 1958. [Annual report of the Health Service for Livestock in Friesland for 1957–1958.] pp. 83. Leeuwarden: Gezondheidsdienst voor Vee. 3005

Tuberculin tests were performed on 216,000 of the 413,000 cattle in Friesland: 42 reactors were slaughtered and TB. was confirmed in 25. Infection of 12 cattle in 3 herds was traced to two human beings with renal TB. caused by bovine-type bacilli. 8 cattle on one farm were infected from a cow with chronic TB., not previously diagnosed. Re-tests on 6,255 cattle revealed non-specific reactions in 2,750 and 15 reactors.

Herds free from BOVINE BRUCELLOSIS (3 negative tests on bulked milk) increased to 16,085 (83.3%). Blood tests confirmed freedom from brucellosis in 5,865 of 5,909 herds examined. Complement-fixation tests were performed when agglutination tests gave doubtful results as a result of vaccination. JOHNE'S DISEASE: 8,761 blood samples were received for c.f. tests, and 370 were positive. A comparison was made of the results of c.f. tests and P.M. findings in 240 cases.

As reported previously [V.B. 28, 2705] the WARBLE FLY has been almost completely suppressed and infestation with larvae was found in only 53 cattle. VIRUS DIARRHOEA occurred

during the year and an account has been published [V.B. 29, 1065]. An outbreak of MERCURY POISONING in cows was traced to a batch of cattle cake, found to contain 150–336 mg. Hg. per kg. A component of the cake had been contaminated during storage with 1.5 kg. of mercury when a reducing valve was accidentally broken. During the year 163 bulls were examined for STERILITY and the findings are given.—R.M.

U.S.A. MONTANA. (1959). Report to the Montana Livestock Sanitary Board, July 1, 1957–June 30, 1958. pp. 38. Helena, Montana: The Board. 3006

946 cases of ACTINOBACILLOSIS and ACTINOMYCOSIS are reported in cattle.

For about four and a half years Montana had no reported cases of ANTHRAX, but in July 1957 a cow died suddenly and anthrax was confirmed. 24 cattle had died before diagnosis. Vaccination of cattle, horses and sheep was started on the four affected and all adjacent ranches and 2,969 cattle, 11 horses and 249 sheep were vaccinated. It is assumed that a considerable increase in water in the area washed up old spores.

Bovine BRUCELLOSIS eradication continues to be the major programme of the Board in co-operation with the U.S. Department of Agriculture and the Agricultural Research Service. So far, 50 out of 56 counties in the State have been declared modified-certified brucellosis-free. Of 153,990 cattle tested only 0.55% were positive. This is the lowest infection rate since brucellosis eradication began in 1931 when 23.8% were positive.

Amongst sheep, epizootic ABORTION was diagnosed in three flocks—the first diagnosis of this disease in the North American Continent, but there is good reason to believe that the disease is widespread and was not recently introduced. JOHNE'S DISEASE in sheep is also thought to be widespread.

Amongst pigs SWINE ERYSIPELAS is the most serious disease. All poultry flocks producing eggs for hatching must be negative to a pullover-typhoid blood test.

The report gives numerous statistics for livestock imports and animal inspections.

—D. S. RABAGLIATI.

## BOOK REVIEWS

CHODKOWSKI, A., LIPNICKI, J., ŁOSIŃSKI, T., PARNAS, J., SZAFIŁSKI, J., TEKLIŃSKI, A. & TUSZKIEWICZ, A. [Edited by CHODKOWSKI, A.] (1959). *Bruceloza zwierząt domowych*.

[Brucellosis in domestic animals.] pp. 467. Warsaw: Państwowe Wydawnictwo Rolnicze i Leśne. [In Polish.] 3007

This valuable monograph contains chapters



on the microbiology of *Brucella*, incorporating sections on nomenclature, pathogenesis, sensitivity to antibiotics, morphology, staining, cultivation, differentiation, research in Poland, brucellosis in laboratory animals, etc., followed by chapters on epizootiology; infection in cattle; infection in other farm livestock; diagnosis; control in Poland and other countries; immunology and vaccines; human infection and treatment. There is an introductory note on the history of brucellosis. A valuable feature is the comprehensive list of bibliographical references, numbering about 900. There are 41 illustrations, many of which are diagrams, and 35 tables. The work is adequately indexed.—E.G.

RIDDELL, R. W. & STEWART, G. T. (1958). **Fungous diseases and their treatment.** pp. xvii+256. London: Butterworth & Co. 45s. **3008**

This volume consists of the proceedings of a symposium on human mycoses held in London in July 1957. Twenty-two papers covered the pathological, clinical, epidemiological and therapeutic aspects of fungal diseases and although some of the work has been published previously the book contains much useful information for the veterinary worker. It is well produced and excellently illustrated.

Two general papers by R. W. Riddell and W. St.C. Symmers survey the role of fungi as pathogens and the pathological features of mycoses. Eight papers cover various aspects of ringworm, of which those by R. Vanbreuseghem on the pathogenesis of tinea infections and by A. J. E. Barlow on theoretical considerations of treatment are of particular veterinary interest. The papers by C. D. Calnan, Mary P. English and J. G. Holmes exemplify the widespread interest in the epidemiology of ringworm. The importance of moniliasis may be judged by the seven papers on this disease. Vaginal and infantile infections are described by T. Anderson, Ian Donald, Sylvia M. Dawkins *et al.*, J. P. Bound, M. Bodian, and I. A. B. Cathie, and treatment by R. F. Jennison. Infections due to aerobic actinomycetes, such as nocardiosis and mycetoma, are described by F. Mariat, who also reviews antifungal therapeutic substances, and the article by O. S. Tubbs shows how penicillin treatment of actinomycosis has largely obviated the need for surgical intervention. Broncho-pulmonary aspergillosis in man is discussed from the diagnostic aspect by K. F. W. Hinson, the paratitic one by G. Ségretain, and its therapeutics by N. S. Plummer, the last-named commenting upon the apparent uselessness of parenteral administration of drugs including iodides.

The serology and immunology of fungal infections are dealt with by K. Citron & J. Pepys in their account of bronchial sensitivity to *Aspergillus* antigens, in the important paper by Charlotte C. Campbell on histoplasmosis, and in the outline of the geographical distribution of histoplasmin sensitivity by Phyllis Q. Edwards. Outstanding is the paper by H. I. Winner in which the immunological relationships of *Candida* spp. are described with emphasis on the need to approach the serology of fungal infections on a different basis to that of other diseases because of the nature and size of the fungus cell. The account by M. L. Furcolow on the apparently successful use of amphotericin B for the treatment of histoplasmosis and cryptococcosis ends the book on the most hopeful note yet recorded on the therapy of these two diseases and possibly other systemic mycoses.

—P. K. C. AUSTWICK.

WIGAND, R. (1958). Morphologische, biologische und serologische Eigenschaften der Bartonellen. [**Morphological, biological and serological properties of bartonellae.**] pp. xi+95. Stuttgart: Georg Thieme Verlag. DM 7.80. **3009**

The purpose of this monograph is to describe the author's own work on bartonella, done at the Bernhard Nocht Institute in Hamburg, and to review the literature published since Weinman's monograph [*V.B.* 19, 432]. The species studied were *Haemobartonella muris*, *Eperythrozoon coccoides*, *H. muris-musculi* and *Bartonella bacilliformis*. After an illustrated description of the morphology there are accounts of infection of lab. animals and of serological tests, including the c.f. test for *H. muris* and *E. coccoides*.—R.M

FISCHER, K. (1958). Studien zur Histopathogenese der Teschener Krankheit bei experimenteller und natürlicher Infektion. [**Histopathogenesis of experimental and natural Teschen disease.**] pp. viii+100. Berlin: Akademie Verlag. [*Wiss. Abh. Dtsch. Akad. Landwirtschaftswiss.* No. 35.] DM 24. **3010**

This is a study of the lesions in 240 pigs, 6–8 weeks old, infected intranasally, i/m, i/v, intracerebrally, orally, or by contact, using one East German and three Czechoslovak strains of Teschen disease virus. Pigs were killed during the preparalytic and paralytic stages. As a rule, lymphocytic perivascular infiltrations were present in the olfactory bulbs 24 hours to 5 days after intranasal instillation. The sixth day lesions began to extend *via* the telencephalon, diencephalon and stem to the lumbar portion of the

cord. Lesions in the cerebellum appeared towards the end of the preparalytic stage. During the paralytic stage the olfactory bulbs, pons, medulla oblongata, cerebellum and cord were predilection sites of lesions. A feature of contact infection was the absence of inflammatory lesions in the olfactory bulbs and telencephalon. Following i/v infection, inflammatory lesions were, as a rule, confined to the rhombencephalon. F. discussed virus distribution in the body *via* the blood, with secondary involvement of the c.n.s. by means of the peripheral ganglia, and the clinical and histological picture of Teschen disease and poliomyelitis. There are 107 illustrations, many of which are photomicrographs of lesions, and summaries in English and Russian. [See also *V.B.* 24, 4057 & 26, 1631.]—E.G.

HUGHES, T. E. (1959). **Mites or the Acari.** pp. vii + 225. London: University of London, the Athlone Press. 42s. 3011

This book provides an excellent general survey of the "mites", including the ticks. Six chapters are devoted to a study of the different habitats of acari, and eight to embryology and anatomy, with a final comprehensive review of the systematics of the Order. Free-living intermediate and parasitic acari are all considered and both veterinary and agricultural parasitologists will find here much of interest. There are 53 original line plates and extensive bibliographies to each chapter.—W. N. BEESLEY.

LAMB, C. A., BENTLEY, O. G. & BEATTIE, J. M. [Edited by.] (1958). **Trace elements. Proceedings of the conference held at the Ohio Agricultural Experiment Station, Wooster, Ohio, October 14-16, 1957.** pp. xii + 410. London (& New York): Academic Books Ltd. \$12.00. 3012

The congress discussed the role of trace elements in plants, animals and micro-organisms. A broad summary of the function of trace elements in animals was given by E. J. Underwood. Other papers relating to animals dealt with selenium (A. L. Moxon); cobalt (G. K. Davies); cobalt in relation to cyanocobalmin synthesis in the rumen (R. R. Johnson & O. G. Bentley); vanadium and molybdenum (A. Nason); copper in relation to enzyme catalysts (H. R. Mahler); zinc (F. L. Hoch & B. L. Vallee); iron (S. Granick).—R.M.

DUNNE, H. W. [Edited by.] (1958). **Diseases of swine.** pp. xiii + 716. Ames, Iowa: Iowa State College Press. \$12.50. 3013

In the words of the preface "Forty-eight authors have devoted themselves to a common

cause in this volume: the publication of a systematic arrangement of complete, accurate and most up to date information on Diseases of Swine".

The arrangement adopted comprises a series of short monographs on diseases grouped broadly on an aetiological basis. The main divisions are Viral Diseases; Bacterial and Mycotic Infections; Parasitic Infections; Toxaemias and Poisonings; and Miscellaneous Diseases. There are also sections entitled Anatomy; Haematology; Physiology; Surgery; and Nutrition, Feeds and Management much of which apart from those on Nutritional Deficiencies, Parakeratosis and on Control and Elimination of Swine Diseases through Repopulation with Disease Free Stock, might well have been omitted and the space used to expand some of the thinner areas elsewhere. Each chapter follows a general plan which helps to prevent undue prolixity and makes for easy reference but the detail and accuracy with which different diseases are described vary. Thus, the excellent chapter on African Swine Fever runs to 14 pages but Paralysis and Lameness are dismissed in 5 and Colibacillosis in a confused 2 pages. There is a good index and at the end of each chapter a bibliography sufficient to take the reader to the source of most of the accepted tenets, but the literature referred to in the text is often out of date or inadequate. Articles of the type presented here should ideally be either distillations of the experience of a worker completely familiar with the disease or thoroughly documented, critical reviews of the literature to date. However in the chapter dealing with tumours all the references are more than ten years old. The observation in the Hog Cholera chapter that "Epizootiologists in general are of the opinion that a natural reservoir of infection exists in nature, which is responsible for the pockets of infection which seem to come from nowhere" is typical of a type of loose comment which has crept into some chapters.

This is not primarily a book for the practitioner but rather for the laboratory worker and advanced student. Despite the criticisms which have been made it should be made quite clear that this is by far the best book in English on diseases of the pig. The authors are recognized authorities in their subjects and the book is well printed (apart from some nonsense at the bottom of page 118) and well and copiously illustrated. It is hoped that the editor will be encouraged to review the aim of the book and that a second edition will be put in hand as soon as possible.—J. T. DONE.



VEALL, N. & VETTER, H. (1958). **Radioisotope techniques in clinical research and diagnosis.** pp. xii+417. London: Butterworth & Co. (Publishers) Ltd. 50s. **3014**

Radioactive isotopes have been available to the research worker for more than ten years and during this time they have been widely used in all branches of biological research. In the basic veterinary and medical studies of biochemistry and physiology they have now taken their place along with techniques such as chromatography and spectrophotometry as standard research tools. In clinical applications they have been used sufficiently to assess their usefulness and potentialities in this field. This competently written book makes that assessment by drawing together in a simple but complete and detailed form all the essential features of the use of this technique in the clinical field.

Whilst it is written for medical clinicians much of it is equally suitable for the veterinary research worker. The many techniques and methods described are in general applicable where only limited facilities are available. The selected references at the end of each chapter, are drawn from a wide variety of journals.

Isotope therapy, which is less likely to interest the veterinary worker, occupies only one short chapter. Diagnostic applications are also of less interest in the animal disease field except in the experimental approach to diagnostic methods, and only one chapter is devoted to this topic and it deals with the localization and differential diagnosis of malignant tumours.

The chapter headings give a good idea of the content of the book. They are as follows — Radioactive isotopes; Statistical factors affecting radioactivity measurements; Radiation detectors; Electronic equipment; Radioactive measuring techniques; Multiple tracer techniques; Radiation hazards; Radiation dosimetry; Some radiochemical procedures; Some simple dynamic systems; Body composition and electrolyte studies; Blood volume; Survival of transfused red cells; Iron metabolism; Vitamin B<sub>12</sub>; Thyroid function tests and localisation studies; Plasma protein turnover studies; Intestinal absorption studies with <sup>131</sup>I labelled fat and protein; Circulation; and the two chapters mentioned previously on therapy and diagnosis.

—M. K. LLOYD.

SCHULZ, H. E. (1958). **Klinisches Wörterbuch der Veterinärmedizin. [Dictionary of clinical veterinary medicine.]** pp. ix+108. Hanover: M. & H. Schaper. 2nd Edit. DM 9.60. **3015**

This second, enlarged edition is intended for the younger generation of German veter-

inarians, whose Latin and Greek education is stated to have suffered as a result of post-war conditions. It may be useful to non-Germans studying German veterinary literature. There are some misspellings, like "New-Castle", "Stiffnes", "Haemophilus influenzae", and from "Rodentiose" and "Pseudotuberculosis" one is referred to tularaemia, of which the above are stated to be synonyms.—E.G.

BENTZ, H., SCHULZE, W. & SCHNEIDER, O. (1958). **Die Arzneiverordnung des Tierarztes. [A handbook for the veterinary dispensary.]** pp. viii + 181. Leipzig: S. Hirzel. DM 9.90. **3016**

The purpose of this textbook, written jointly by a professor of veterinary pharmacology, a professor of veterinary medicine, and a lawyer, for veterinary students and practitioners in the German Democratic Republic, is to present the practical as well as the legal aspect of dispensing, with special reference to post-war conditions and changes in the legislation of East Germany. It contains chapters on the dispensing law, the practitioner's dispensary, weights, measures and doses, regulations concerning poisons, prescriptions, the pharmaceutical trade, advertising, and various forms of medicinal preparations.—E.G.

BRADLEY, O. C. Revised by: Grahame, T. (1959). **Topographical anatomy of the dog.** pp. xiv+332. Edinburgh (& London): Oliver & Boyd. 6th edit. 36s. **3017**

Although it would seem impossible that "Bradley's dog" should be unknown to any workers that need to dissect this species there may be some who are unfamiliar with this work. To these it should be explained that this edition, as previous ones, guides the student through a dissection starting with the abdomen and thorax, followed by the hind limbs, pelvis and fore limbs and finishing with the head and neck. Instructions are given as to where and what to cut and general information provided on the structures as they are revealed. The whole text is well illustrated (132 text figures mostly in colour and 21 plates, many being radiographs) and the dissection sufficiently detailed for most research workers.

Those already using this guide will want to know how this edition differs from the previous one. One can only say, surprisingly little. The layout is exactly the same but additional information is given in about 20 places. In many cases this is in the order of a few lines, but the section on the autonomic system has been con-

siderably expanded and the uro-genital system has also received a few extra paragraphs.

Some of the old failings remain; figure 3 still has the inguinal canal incorrectly shown; we are still told that the data on the eyeball are according to Koschel, without being given a full reference; the radiograph in plate 19 is of a half head and not a whole head; plates 15 and 16 are of young animals and ought to have the epiphyses mentioned as with plate 12. There is now added the statement in the description of the liver circulation that "the dog has a muscular throttle mechanism" without being told where it is or what it throttles.

These and similar features are minor irritations in what is otherwise a most useful dissection guide (and not really a topographical anatomy) of the dog.—R. N. SMITH.

HITCHCOCK, F. C. (1959). **Saddle up. A guide to equitation and stable management including hints to instructors.** pp. 286. London: Stanley Paul. 25s. **3018**

Those whose enthusiasm for the horse was in its first flush twenty-five years ago will recognize the title and author as friends of their youth. This book is still as full of sound advice, useful information and "horse sense" as it ever was. It is written in an attractive and enthusiastic manner and the factual knowledge is liberally sprinkled with anecdotes and reminiscences of the type which form the basis of conversation wherever horsemen gather.

Most aspects of equitation and horse management are covered with surprising thoroughness for a book of under 300 pages. But a chapter devoted to shoeing would be a welcome addition and would seem to be of equal impor-

tance with one on biting. Good farriers are rare and it is therefore more essential than ever for the horse owner to know precisely what he wants.

This edition is stated to be completely revised, but still reads like a pre-war book. Horses do not change, nor does much of the knowledge concerning them. But the devotees of the cult of the horse have done so, although their enthusiasm is no less. They are interested in equitation as it is to-day, they frequently have no connexions with the cavalry (pre-mechanization) nor can they claim horse-owning ancestors. The book might have a wider and more intimate appeal if the author had shown himself to be fully aware of this. Many horse lovers have little or no opportunity of riding to hounds. Perhaps some of the space given to hunting and hunting etiquette could have been used with advantage to form a larger section on children's riding. After all, it is with the children that the future of the horse rests, except for the specialized business of racing. Very welcome too would have been a little more emphasis on dressage and its practical value in show jumping. Apart from a mention in the appendices nothing is found about the great art of haute école. There is or was a tendency to regard this as rather "un-British" and fancy. Nevertheless equitation as an art reaches its peak in haute école and its greatest exponents are still to be found at the Spanish Riding Academy in Vienna.

Col. Hitchcock has written about the horse world that he personally has known for so long and there is no denying this to be an accurate informative and easily understood book; which is what the author intended it to be.

—B. S. HANSON.

## BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review]

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Reports of Departments, Special Reports, reprints, etc., etc., should be sent as soon as they are issued.

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Bulletins on disease subjects written for farmers and "popular" articles of a similar nature are not included in the *Veterinary Bulletin*. Those of a sufficiently important nature are, however, included in *Index Veterinarius*; so also are certain review articles, presidential addresses, congress proceedings, etc., where the title conveys as much information as could be given in an abstract of a few lines. For information of this nature, readers of the *Veterinary Bulletin* are referred to *Index Veterinarius*, where titles of all publications indexed by the bureau are fully cross-referenced.

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## ERRATA

- V.B. 29, abst. 455. Line 2 of abst. For "cyanacethydrazide," read : cyanacethydrazide.  
abst. 1060. The second author's name should read: TUMOVÁ, B.  
abst. 1093. The joint author's initials are P. H. A.  
abst. 1373. Lines 2-3 of abst. Instead of "para-aminophenyl-diazoamino derivative of dimidium chloride," read: meta-amidinophenyldiazoamino derivative of homidium chloride.

## ABBREVIATIONS OF NAMES OF PUBLICATIONS

The abbreviations used in *Index Veterinarius* and *The Veterinary Bulletin* are those of the *World List of Scientific Periodicals published in the years 1900-1950*, 3rd Edit. (1952), London: Butterworths Scientific Publications.

The transliteration of Cyrillic characters is that given in  
*British Standard 2979: 1958.*

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